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VOLUME 126, No. 18 APRIL 29, 1948

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CALENDAR OF COMING EVENTS

April 28-29—National Paperboard Association Spring Meeting, Seaview Country Club, Absecon, N. J.

May 9-12—National Paper Box Manufacturers Association, Annual Convention, Cincinnati, O.

May 19, 20, 21, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

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Paper TRADE JOURNAL

VOLUME 126, NO. 18 REG. U.S. PAT. OFF. APRIL 29, 1948

Technical Section to Go West for Meeting

MONTREAL—The 1948 summer meeting of the Technical Section, Canadian Pulp and Paper Association will be held at Harrison Hot Springs, B. C., September 8th, 9th and 10th, in the Harrison Hot Springs hotel.

This is the first meeting of the Technical Section to be programmed on the West Coast and the Pacific Coast Branch of the Section will act as host to the meeting. A diversified programme of technical papers and group discussions will be scheduled; however, a further announcement will be published as soon as final details have been arranged. A committee has been organized to arrange a programme for the entertainment of ladies and in this connection it is probable that an afternoon tea, bridge and a boat trip on Harrison Lake will be planned.

It is expected that many delegates will wish to visit the West Coast mills following the meeting, and the mills listed below have extended a cordial welcome to delegates wishing to make these visits: B. C. Pulp & Paper Co. Ltd. Port Alice, B. C., Woodfibre, B. C.; Bloedel, Stewart & Welch Ltd., Port Alberni, B. C.; Pacific Mills Limited, Ocean Falls, B. C.; Powell River Company, Limited, Powell River, B. C.; Sidney Roofing & Paper Co. Ltd., Victoria, B. C.; Sorg Pulp Company, Limited, Port Mellon, B. C.; Westminster Paper Co. Ltd., New Westminster, B. C.

In order to facilitate arrangements in this regard, all correspondence relating to mill visits should be addressed to the Secretary of the Pacific Coast Branch, J. C. W. Evans, Sorg Pulp Company, Limited, at Port Mellon. Such correspondence will be handled by a committee organized to advise as to travelling accommodation on the West Coast as well as visits to the mills. Steamship accommodation is usually booked to capacity many weeks ahead and it is therefore suggested that those planning mill visits should act as soon as possible.

A special train will carry delegates to the meeting from the East. Since most of the members attending the meeting will wish to make mill visits after the meeting, no arrangements will be made for a special train on the return journey. The special train will leave Montreal on the evening of September 3rd. Special cars will leave Toronto on the same evening and will join the Montreal train at Sudbury, Ontario. Requests for train reservations should be addressed to the office of the Secretary-Engineer and will be allocated in the order in which they are received.

Arrangements have been made to obtain reduced fares for those travelling by train to this meeting. These reduced fares are applicable only for delegates who travel both ways by train, on Canadian Railways. Reduced fares may also be used on steamship lines between Vancouver and Victoria and Vancouver and Powell River, but not between Vancouver and Ocean Falls. The rate charged will be fare and one-third for those travelling both ways on the same route. For rates pertaining to diverse routes, consult the local ticket agent.

The Technical Section does not handle hotel reservations. Such reservations should be addressed to O. W. Anderson, manager of the Harrison Hot Springs Hotel, Harrison Hot Springs, B. C. Please note that no hotel reservations will be accepted unless the date and time of arrival and departure are given.

Six Michigan Mills to Attack De-Inking Waste Problem

LANSING, Mich.—The cost of a small commercial-type plant for the disposal of paper mill de-inking wastes will be shared by six paper plants in the Kalamazoo area, under a pollution control plan approved Tuesday afternoon of last week, at a meeting called by the state stream control commission to consider ways of preventing stream pollution from the mills. Construction of the commercial-type de-inking waste disposal plant was suggested by the mill representatives themselves.

The cost of the plant, its location and proportional share of the expense to be borne by each of the participants are yet to be determined.

On the committee will be representatives of the six affected mills—the Kalamazoo Paper Company, St. Regis Paper Company, Allied Paper Mills, Rex Paper Company, Michigan Paper Company, and Watervliet Paper Company. Milton P. Adams will serve on the exploratory committee in an advisory capacity. He is chairman of the state commission. Another member probably will be Philip F. Morgan, resident engineer for the national council for stream improvement.

The plan, approved by the stream control commission, tentatively calls for a disposal plant of probably 500,000 gallons daily capacity, to be constructed at one of the Kalamazoo area mills as a trial operation. It would be built along the lines of the "pilot" plant operated last year at the Michigan Paper Company, Plainwell.

James Wise, vice president of Kalamazoo Paper Company, who presented the mill operators' proposal for a commercial-type de-inking plant, said that his group had no details or specific plans to offer immediately.

One proposal was that the disposal plant be built at one of the small mills and then be "sold" to that mill after the test period. It was suggested that a corporation might be formed to handle the commercial-scale test plant.

Conservation Director P. J. Hoffmaster assured mill operators that the state commission "wants no one to spend a lot of money unless we are sure there will be some benefits."

(Continued on page 34)

Van de Carr Heads Mead; Ferguson Made Chairman

DAYTON, Ohio—C. R. Van de Carr Jr., formerly executive vice-president, was elected president of the Mead Corporation at the annual meeting of directors this week. He succeeds Sydney Ferguson, who was made chairman.

George H. Mead relinquished his office as chairman of the board and was elected to the new office of honorary chairman. His action was in line with the long-standing policy of the corporation which specifies 70 years as age of retirement from active participation in company affairs. He will continue in an advisory capacity as chairman of the executive committee.

Other executive elections included J. O. Mason, former operating vice-president, promoted to executive vice-president; H. E. Whitaker, to operating vice-president; Al H. Mahrt, former treasurer, to a vice-president and George Robinson, to treasurer.

Pond's Extract Makes Young a Vice-President

NEW YORK—Robert M. Young has been elected vice-president by Pond's Extract Company. Mr. Young is head of the division manufacturing Pond's Tissues.

As manager of that division, Mr. Young joined Pond's in 1943. Previously, he had been with the Scott Paper Company, Chester, Pa., from 1931 until 1943.

Mr. Young was born in Denver, Colo., in Jan. 1908. He attended the University of Denver and was graduated in 1931 from the University of Michigan, with the degree of Bachelor of Science and Mechanical Engineering. While in college he was an Intercollegiate wrestling champion and a letter man in college tennis. Mr. Young attended the University of Maine for a year during his period with the Scott Paper Company, and received the degree of Master of Science in Pulp and Paper Technology.

Mr. Young is chairman of the Facial Tissue Division, and is also a member of the Board of Directors of The Tissue Association.

Mead is Praised For Library Gift

WISCONSIN RAPIDS, Wis.—Benefactors of the new T. B. Scott public library were honored last week at the dedication of the building. Included among them was George W. Mead, president of Consolidated Water Power and Paper Company, who purchased the building and presented it to the city for its present use.

Speaking for the city planning commission, W. W. Rickman, alderman, said that none but Mr. Mead would have had foresight to consider and select this particular building to be used as a much-needed library.

"This library will be dedicated again and again as we use it," Mr. Mead said, adding a hope that it will be a center of culture and learning for the city.

Barton Joins Marathon as Sales Training Supervisor

MARATHON, Wis. — A. W. Stompe, Marathon Corporation's general sales manager, has appointed R. J. Barton in the position of sales training supervisor for the Field Selling Department. A graduate of Temple University where he majored in retailing, marketing and distributive education, Barton has experienced a varied career in the teaching of wholesale and retail distributive methods, during his association with organizations such as: Bamberger's, Kopper's Coke, Warner Brothers Theaters, and as Training Director, Eastern Division of the Great Atlantic and Pacific Tea Company.

ROBERT M. YOUNG
Elected to a vice-presidency

Raybestos-Manhattan Elects Rohrbach to be President

PASSAIC, N. J.—John F. D. Rohrbach was elected president of Raybestos-Manhattan, Inc., at the last meeting of the board of directors, succeeding Sumner Simpson, who has been president since the formation of the corporation in 1929, and becomes chairman of the board and of the finance committee.

Mr. Rohrbach, who joined the corporation in 1939, has served in the positions of assistant to the president, executive vice-president and treasurer. Previous to that time he was a senior partner in the accounting firm of J. Lee Nicholson & Co., auditors, where for many years he worked in close association with Raybestos-Manhattan in financial and advisory management capacities.

Other officers elected at the same meeting were W. H. Dunn, former comptroller, who was elected treasurer, and W. W. Kievit, formerly secretary, who was elected comptroller and secretary. Two new members added to the board of directors were W. S. Simpson, director of personnel of the Raybestos Division, and George W. Marshall, Jr., general manager of the Asbestos Products Division.

Dan Quirk Again Elected Mayor of Ypsilanti

YPSILANTI, Mich.—Daniel T. Quirk, vice-president and sales manager of the Peninsular Paper Company in this city, was returned for a second term as mayor of the city at the organization meeting of the city council last week. His first term in the office was voted an outstanding success by citizens of the city.

Pacific Coast Group Elects Turcotte

PORTLAND, Ore.—Lawson Turcotte of the Puget Sound Pulp & Timber Company, Bellingham, last week was named president of the Pacific Coast Association of Pulp & Paper Manufacturers. He succeeds Jack Smith of the Hawley Pulp & Paper Company, who had held the office since the association was formed 14 years ago.

Other officers named are Alexander R. Heron, Crown Zellerbach Corporation, San Francisco, executive vice-president; Anson Moody, Everett Pulp & Paper Company, vice-president, and Robert Wertheimer, Longview Fiber Company, secretary-treasurer.

The association is continuing contract negotiations which started here Monday with the AFL International Brotherhood of Paper Makers and International Pulp Sulphite and Paper Mill Workers. Sessions are being held in the Masonic temple.

Alan Crowley Joins Brown Bridge Mills

TROY, Ohio — The Brown-Bridge Mills, Inc., manufacturers of gummed tapes and gummed paper, has added Alan Crowley to its sales force as representative in the southern states.

Mr. Crowley was sales promotion manager for Gardner-Richardson and Dobeckmun Company, following experience in promotion and sales with the Lily-Tulip Cup Corporation. He has also been very active in writing technical articles on packaging subjects for numerous trade publications during the past few years. In his new connection he will have opportunity to make use of his exceptional sales promotion and technical ability.

Mr. Crowley will make his home and office at 602 Hickory St., Chattanooga, Tenn. He will cover Tennessee, the Gulf and South Atlantic States on the complete Brown-Bridge line.

Boyce Continued as D. J. Murray President

WAUSAU, Wis.—Fred C. Boyce was re-elected president of the D. J. Murray Manufacturing Company, at the meeting of the directors following the annual stockholders' meeting last week. The other officers elected are: M. P. McCullough, vice-president; C. E. Stakey, executive vice-president and general manager; J. S. Alexander, treasurer; and A. W. Plier, secretary and assistant manager. The following directors elected in addition to Mr. Boyce are: M. P. McCullough, C. E. Stakey, J. S. Alexander, A. W. Plier, D. C. Everest, Grover Keeth, and G. L. Ruder.

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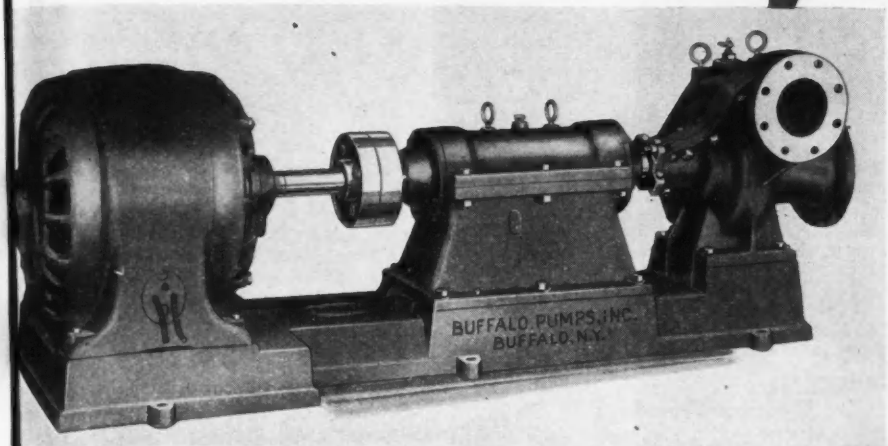

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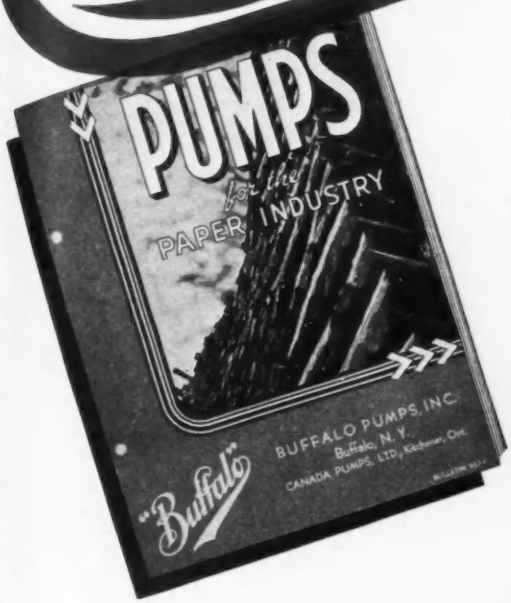

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RUGGED, PRECISION CONSTRUCTION—FOR LONG LIFE

Fox River Sales Club Elects R. B. Sawtell

MENASHA, Wis. — The Fox River Valley Sales Executive club, meeting at the North Shore Golf Club Friday evening, April 23, elected as president R. B. Sawtell, of Neenah, sales manager of the creped wadding division of Kimberly-Clark Corporation. A. W. Stompe, Neenah, general sales manager of Marathon at Menasha, was chosen vice-president, and A. G. Desens of the Eagle Manufacturing Company, Appleton, was elected secretary-treasurer. About 35 sales executives from industries throughout the valley attended.

The principal speaker was Dr. Melchior Payli, economist and former financial adviser to General Lucius Clay, American commander in Germany, and before 1933 financial adviser to the German Reichsbank, managing director of its Institute on Currency Research, and adviser to the Deutsche bank, largest banking institution on continental Europe. Since leaving Germany, he has been a guest professor at Chicago, Wisconsin and Northwestern universities.

Dr. Payli said that Russia does not want war now, but that its policy is to try to bleed the capitalistic system into a depression; that she is trying to undermine and sabotage the economic systems of other countries. He expressed belief that the Soviet Union will not fight unless attacked, and will stay out of countries she fears the United States may enter with troops.

He deplored British and French restrictions on the franc and pound, saying that these actions tend to bankrupt currencies of other nations and thus play into the hands of the Russians. He said that the next crisis in Europe would be in Finland on July 1, and that the Finnish police force is communistic, thus giving Russia a physical force in the election. Should the United States decide to send troops into Finland, he declared, Russia would not enter.

"What did we win in Italy?" he asked. "We won a billion dollar obligation each year for the rest of our lives. Her two main industries, tourist traffic and immigration, are bankrupt."

He was unhappy about the armament and Marshall plans, contending that they play in Russia's favor by promoting inflation.

"It would be cheaper to destroy Russia now than to have us financially destroyed five or ten years from now. The only way to contain Russia is by threatening war, even if we are not ready to fight."

Dr. Palyi said that the steel and paper industries are the basic indicators of the business cycle and that they reflect the American economic picture more than anything. He scored those who believe a depression is just around the corner, just because a depression followed World War I.

COURTNEY H. REEVES
Heads Carter, Rice

Charlton Firm Buys Queensbury Mill

NEW YORK—F. M. Charlton Company of this city, book binder, has purchased the pulp mill at 160 Lower Warren Street, Queensbury, from Harold Wells of Glens Falls, and will operate the plant under the name of the Manhattan Pulp and Paper Company, Inc. The plant is located two miles east of the city of Glens Falls. The mill will produce wet pulp laps, mostly for facial tissue. Expansion is planned, with a bleaching process to be installed. Capacity will be stepped up to fifty tons of air dry pulp in twenty-four hours.

Combined Locks Completes New Locker Room

COMBINED LOCKS, Wis. — The locker and shower room for shift workers on machines and beaters and maintenance men at the Combined Locks Paper Company has been completed. The new room, about 36 feet wide by 65 feet long, replaces several old departmental locker rooms and completes the connection of all sanitary waste in the mill to the municipal sewerage system.

Ultramodern in every respect, the room contains 280 metal individual lockers, two large, circular wash ponds, a 5-stall, circular shower and toilet room. Tile linoleum covers the floor and six fluorescent lights provide light.

Office Managers Elect Harley

BUFFALO, N. Y.—R. Roy Harley of the National Gypsum Company, has been elected treasurer of the Buffalo Chapter of the National Office Management Association.

Reeves Is Named As Carter Rice Head

NEW YORK—Bulkley, Dunton & Co., has named Courtney H. Reeves to be president and general manager of Carter, Rice & Co. Corp., its wholly owned subsidiary. Mr. Reeves was formerly vice-president of Allied Paper Mills, a post which he resigned on April 1st after seventeen years' association with the company. Prior to that he was for six years director of sales of Paper Mills Company, a wholesale paper house of Chicago.

Having spent almost thirty years in both the manufacturing and merchandising end of the paper business, Mr. Reeves brings wealth of experience to his new position as one of the top executives of the Bulkley, Dunton organization. He started his career with Dill and Collins in his native Philadelphia, and spent six years with that company. During part of this time he covered the New England territory.

For a good many years past, Mr. Reeves has taken a keen interst in the activities and management of the Salesmen's Association, was president of that group in 1942 and 1943, and served at one time or another on practically every committee. In 1933 he took part in the formulation of the N.R.A. trade customs for the paper industry which later served as a basis for establishing standard customs and practices.

In his private life, Mr. Reeves takes a great deal of interest in boys' activities. He is a trustee of the Union League Foundation for Boys Clubs and was director for eight years of the Evanston Y.M.C.A. For recreation he prefers golf and fishing.

Don G. Kettner Joins Nepco Traffic Staff

PORT EDWARDS, Wis.—Henry Fredlund, traffic manager of Nekoosa-Edwards Paper Company, has added Donald G. Kettner to his staff. A native of Rhinelander, and until recently a resident of Marquette, Mich., Mr. Kettner acquired experience in traffic work with the Duluth, South Shore and Atlantic Railway Company. He was educated in the Newberry, Mich., public schools, graduating from high school there in 1940.

Mr. Kettner's experience with the South Shore Railway began in February, 1941, when he took up duties as secretary to the assistant general freight agent in Marquette. Soon thereafter he was advanced to rate clerk, a position which he held until he entered the United States Coast Guard in December, 1942.

Upon receiving his discharge Mr. Kettner returned to Marquette, Michigan, and resumed his duties as rate clerk for the South Shore Railway where he remained until March 1, 1948, when he left to join Nepco.

Jacketed Drier Rolls Paid for Themselves in 268 Days!

THIS IS HOW IT WAS FIGURED

$$\frac{\text{Tons produced by machine per day}}{\text{Total number of drum driers}} \times 15\%^{*} = \text{Additional tons per Lukenweld Drier per day}$$

$$\frac{\text{Cost per Drier}}{\text{Additional tons} \times (\text{Operating Cost} + \text{Operating Profit})} = \text{Number of days for LW Rolls to pay for themselves}$$

*15% is the increased production per Lukenweld Drier and with all rolls (cast and Lukenweld) operating at only 50 psi.

A company which installed Lukenweld Jacketed Drier Rolls to replace several cast iron rolls in a drying machine showed that the Lukenweld Rolls paid for themselves in 268 days. This was the result of the 15% additional output per Lukenweld Roll. From then on the increased production was clear profit.

In its estimates the company used these costs:

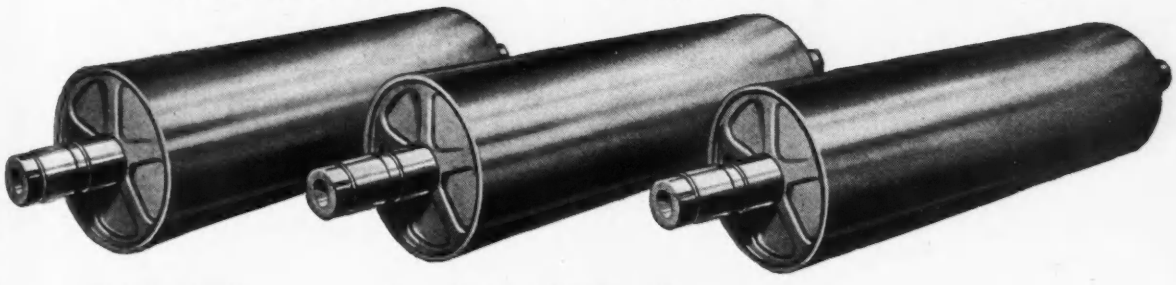
$40.00 = Raw Material Cost
+$25.00 = Operating Cost
$65.00 = Cost per Ton of Product

Based on a selling price of $85.00 per ton, there was an operating profit of $20.00.

Using the above formula based on all rolls operating at 50 psi steam pressure, the user showed that the Lukenweld Rolls paid for themselves in 268 days.

This company, however, is running its Lukenweld Rolls at 150 psi. Had the estimate been based on this higher pressure, with the resultant 48% additional output per Lukenweld Roll, it would have shown that the rolls had paid for themselves in 85 days.

For additional details, write to Lukenweld, Division of Lukens Steel Company, 403 Lukens Building, Coatesville, Pa.



LUKENS
LUKENWELD DIVISION

LUKENWELD
DRIER ROLLS AND DRYING MACHINERY

FINANCE

Powell River Earned $6 Million in 1947

POWELL RIVER, B.C.—The Powell River Company Ltd. earned $6,012,349 on the operations during 1947 of its pulp and paper mill. This works out at $4.47 per share as compared with $2.56 per share in 1946 when earnings were $3,440,378.

Harold S. Foley, president of the company states that the successful result may be attributed mainly to improved operating efficiency arising from expansion and improvements carried out in recent years, together with increased prices for products.

The 1947 statement shows that nearly six million dollars was spent on plant extensions and improvements and that $3,697,911 or $2.75 per share was paid in dividends. In 1946, when $2,975,355 was spent on capital account, dividends totalled $2,151,512 or $1.60 per share. The company paid 61.50 percent of net earnings to shareholders in 1947 compared with 62.54 percent in 1946.

Before deductions for write-offs and taxes, consolidated earnings in 1947 were $12,188,249 compared with $8,091,126 in 1946. After $1,596,900 for depreciation and depletion and $4,579,000 for income and E.P. taxes, net profit, as stated, was $6,012,349. In 1946 when write-offs were $1,285,048 and taxes $3,365,700, net was $3,440,378.

The company reinvested or retained in the business $2,314,438 of the 1947 tal, at Dec. 31, 1947, was $7,267,688 earnings and as nearly $6,000,000 was spent on capital account, working capi- compared with $9,354,837 at the end of 1946. Plant extension and development accounted for $4,315,111 of the capital outlay; timber holdings for $1,227,567; logging equipment and development for $256,405; tugs and scows for $153,790 and miscellaneous $45,614.

Indications are that the unprecedented demand for pulp and paper products experienced in 1947 will continue through 1948, says the report. This is particularly the case on the west coast of North America where most of Powell River's output is consumed. Newsprint production at 239,087 tons was 12,599 tons more than

(Continued on page 16)

Rising Costs Turn Eagle A Profit to Loss

HOLYOKE, Mass.—American Writing Paper Corp. reports for quarter ended March 31 a net loss of $15,656 after reserve for taxes.

Increased costs have sharply curtialed American Writing Paper Corp.'s gross profit margins, said Thomas H. Blodgett, chairman of the board. Currently, too, he added, there is a continued lack of purchasing for even normal inventory requirements. Together, these factors combined to produce the drop in profits in the first quarter from the like 1947 period.

Mr. Blodgett said it is hoped future business activities together with the joint efforts of the company's staff may result in an early reversal of this trend.

Brompton Profits Up 24 Per Cent in '47

TORONTO—According to President President Noah A. Timmins, net profit for Brompton Pulp & Paper in 1947 was up 23.5 percent. Tonnage sold and net sales value increased to a record high. Capital expenditures on Red Rock mill buildings and machinery amounted to $319,304, bringing the total cost of the unit to $7,061,290. Adding to this capital expenditures on Red Rock townsite of $1,310,847, on the timber limits of $689,896 and on the Nipigon groundwood mill of $26,506, brings aggregate capital cost of Red Rock division to $9,088,539.

In the 1947 statements, assets and liabilities of all wholly-owned subsidiaries have been completely consolidated with those of parent company, whereas the previous year the company's interests in Brompton Lands, Ltd. and McCrea-Wilson Lumber Co. were represented under the item "investments in and advances to subsidiary companies."

As part of the company plan to modernize its East Angus division gradually, so as to increase quality and range of products, approximately $200,000 will be spent this year on installation of new stock preparing and refining equipment.

Total tonnage produced during the year was 183,581 as against 161,578 in 1946.

Gypsum Declares on Preferred

BUFFALO, N. Y.—National Gypsum Company directors have declared a regular quarterly dividend of $1.12½ a share on the preferred stock, payable June 1 to stock of record May 18.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending April 24, 1948

STOCKS

	High	Low	Last
A. P. W.	5¼	5⅛	5⅛
Armstrong Cork Co.	50½	48½	50¼
Armstrong Cork Co., 4 pf. 4	110½	109	110
Armstrong Cork Co., pf. 3¾	95½	94½	94¾
Celotex Corp.	27¾	26½	27½
Celotex Corp., pf.	18⅝	18⅝	18⅝
Certain-Teed Products Corp.	17⅜	16⅝	17
Champion Paper & Fibre Co.	23¾	22¼	23⅜
Champion Paper & Fibre Co., pf.	96½	96	96
Congoleum Nairn Co.	33¾	32¼	32¼
Container Corp. of America	40	39⅛	39½
Container Corp. of America, pf.	97½	97½	97½
Crown Zellerbach Co.	30½	29⅝	30⅛
Crown Zellerbach Co., pf. 4.20	100	98	98½
Crown Zellerbach Co., 4 pf. 4	113½	111⅝	113½
Dixie Cup Co.	37½	34⅝	37½
Dixie Cup Co., A	56	53	53½
Flintkote Co.	37⅝	36½	36¾
Flintkote Co., pf.	99	99	99
Robert Gair	8⅞	8⅜	8⅜
Robert Gair, pf.	19½	19	19½
International Paper Co.	56¾	54	56¾
International Paper Co., pf.	97	97	97
Johns-Manville Corp.	38½	36½	37½
Johns-Manville Corp., pf.	112	112	112
Kimberly-Clark Corp.	22⅝	22⅛	22⅛
Kimberly-Clark Corp., pf.	103	101½	102⅛
Mac Andrews & Forbes	38	37¼	38
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	21¼	20½	20¾
Mead Corp.	20⅜	19½	20⅛
Mead Corp., pf. 4¼	90	88½	90
Mead Corp., pf. 2	41	41	41
National Container Corp.	13⅛	12⅜	12⅜
Paraffine Companies, Inc.	26	25¾	26
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	29¼	28	28¾
Rayonier, Inc., pf.	33¾	33¼	32¾
Ruberoid Co.	63	60½	62
St. Regis Paper Co.	10⅞	10⅝	10⅜
St. Regis Paper Co., pf.	85	84½	84⅜
Scott Paper Co.	44¾	43⅜	44½
Scott Paper Co., pf.	94½	94	94
Sutherland Paper Co.	39½	39	39½
Union Bag & Paper Corp.	34	32⅜	33½
United Board & Carton	13¾	13⅛	13½
U. S. Gypsum Co.	100½	98⅞	100
U. S. Gypsum Co., pf.	....	....	....
United Wallpaper	5⅛	5	5⅛
United Wallpaper, pf.	....	....	....
West Virginia Pulp & Paper Co.	46	44	46
West Virginia Pulp & Paper Co., pf.	106	105	105

BONDS

Celotex Corp., 3½s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....
Mead Corp., 3s '68	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending April 24, 1948

STOCKS

	High	Low	Last
American Writing Paper Corp.	8⅛	7½	8½
Great Northern Paper Co.	41	39	41
Taggart Corp.	11	11	11

Problems?

8 CHEMICAL PREPARATION
IN ANY PHASE of chemical processing, the problem of pumping corrosive and abrasive liquids never fails to present itself. Applications of this type are among the most severe that can be encountered as far as pump wear is concerned. It was for this reason that Allis-Chalmers developed its line of process pumps. They are designed to handle slurries occurring in the pulp and paper industry over a wide range of conditions with a minimum of wearing parts. In the five sizes available, the only parts subject to wear are casings, runners, and wear plates. The suction covers are not erected because of the low velocities involved.
Among the design features meant to give mill operators and maintenance men time and expense are the following: (a) stuffing box on the suction side of the pump which limits pressure on the stuffing box to static head on suction; (b) reversible stuffing box with provisions for both grease and water seal; (c) single suction impellers which permit larger valve sizes; (d) adjustable wearing clearance which insures maintenance of capacity and efficiency without dismantling the pump.
In addition to these pumps and their drives, Allis-Chalmers supplies a complete line of agitator drives as used in the chemical sections of the plant. It also provides factory-trained representatives and dealers to help you. You can depend on them to recommend the right size and type motor for each job.
Low-Maintenance D
Air Dryer
Air Storage
Air Compressor
Chlorine Cell
Hydrating Tank
Lime
Milk of Lime Storage
SSB Pump
SSU Pump
CW Pump
CHEMICAL PUMPS. These twin SSU pumps integrally mounted with Allis-Chalmers 10 hp motors are one of three sizes recommended for service in chemical preparation and recovery. Units here are 3 by 4 inch sizes.
AFTER FIVE YEARS CONTINUOUS SERVICE in one of the toughest of drive applications... a chemical pump—this Allis-Chalmers... motor is still operating satisfact... maintenance design pays off...

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Sulphite process	

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New England Unions Seek 25-Cent Raise

HOLYOKE, Mass.—A 25-cent-an-hour pay increase will top the list of demands of local papermakers in negotiations for a new contract. The unions involved in the contract negotiations are Local 226, Paper Mill Workers Union, AFL, and Eagle Lodge of Papermakers No. 1, AFL.

The new wage scale calls for a minimum of $1.14½ an hour, with a maximum of $1.62 an hour. The present wage scale—in the contract which expires May 31—ranges from 89½ cents an hour to $1.37 an hour.

International Organizer Edward M. Moore and officers of the two local unions will present the union demands to Harold T. Martin, labor representative for the manufacturers.

The present sickness and accident plan in effect for union members will also come in for consideration during the contract discussions. The unions favor the "package plan" which includes sickness, accident, hospitalization, medical and life insurance. Another step favored by the unions is a 100 percent union shop. The basis for this demand is the recent poll under the Taft-Hartley Law, in which a vote of 1,064 to 88 showed a desire for total unionization.

Other items to be asked from the manufacturers are the check-off system of dues, and seniority rights. No change will be made in the vacation plan which now calls for two weeks each year.

Marathon Declares on Common and Preferred

ROTHSCHILD, Wis.—Directors of the Marathon Corporation have declared quarterly dividends on both the common and preferred stock of the company. The common dividend of 25 cents, subject to a 2.5 percent deduction for Wisconsin privilege dividend tax, is payable May 20 to stockholders of record at the close of business April 30. The preferred dividend will be $1.25 a share net after provision for the Wisconsin privilege dividend tax, and will be payable July 1 to stockholders of record June 19, 1948.

St. Regis-Taggart Employes Will Vote on Union

BUFFALO, N. Y. — More than 3,000 employes of St. Regis Paper Company and Taggart Corporation in eight plants in northern New York and at Nazareth, Pa., will vote on union shops in the near future.

The National Labor Relations Board announced the elections would be held for 1,000 workers at Oswego, 625 at Deferiet, 425 at Carthage, 350 at Watertown, 250 at Norfolk, 125 at Harrisville, 95 at Herring and 200 at Nazareth.

One group at Deferiet will vote on the International Brotherhood of Firemen and Oilers (AFL). All the other elections involved either the International Brotherhood of Pulp, Sulphite & Paper Mill Workers or the International Brotherhood of Paper Makers (both AFL).

West Virginia Seeks Union Cooperation

COVINGTON, Va.—In reply to a letter from Frank Donner, associate general counsel of the CIO, West Virginia Pulp and Paper Company (April 23) stated it had renewed an offer to United Paperworkers of America (CIO) to discuss wage increases at its Covington (Va.); Luke (Md.) and Williamsburg (Pa.) plants after the pension plan for hourly paid employes is installed.

Donner said the union was to "negotiate and conclude wage increases" immediately, and suggested April 27 as the date for a meeting to discuss wages and the pension plan.

Officials of the West Virginia Pulp & Paper Company replied, however, that April 29 would be the first available date for a meeting of any kind and that at that time it would like to explain the final details of the pension plan and enlist the help of the union in installing it.

"If the union assists in the task of explaining and installing the plan, it might be possible to complete the job in time to meet to discuss wages sometime in May," it was suggested.

Company officials pointed out that "the reopening clause in the contract does not promise an automatic increase each time the union chooses to invoke it."

Robert Gair Net at $1.4 Million for Quarter

NEW YORK — Robert Gair Company, Inc., and subsidiaries report for the quarter ended March 31, 1948, combined net profit of $1,393,290 after provision of $726,000 for federal income taxes, equal after preferred dividend to 73 cents per share on the 1,779,888 shares of common stock. For the first quarter of 1947, combined net profit was $1,405,416 after provision of $740,000 for federal income taxes, equal after prefered dividend to 76 cents per share on the 1,740,440 shares of common stock.

Crowther to Attend Pulp Union Meeting

Cohoes, N. Y.—Merton W. Crowther, president of the local branch of the International Brotherhood of Papermakers, has been chosen to represent the organization at the meeting of the New York State Council of Pulp & Paper Mill Unions to be held at Utica during the latter part of this month. He is also a member of the council's executive board. Plans have been made for a banquet, May 16.

Smith Sees Labor Protected by Law

KAUKAUNA, Wis.—Rights labor acquired under the Wagner act have not been lost under the Taft-Hartley law and the latter is not a slave labor act for workmen or for unions, L. C. Smith, director of industrial relations for the Thilmany Pulp and Paper Company, declared April 21 in a talk before the Kaukauna Rotary club.

The four main rights of labor, he said, are: The right to join a union, the right to establish an all-union shop through election, the right to strike with 60 days' notice, and the right to quit a job at any time.

He said that the Taft-Hartley law gives the working man protection against discrimination on the part of union bosses and said that under the law the worker has the right to authorize or not to authorize check-off of union dues and forced accounting of the expenditure of union funds.

Smith went into detail on the organization of the Thilmany Pulp and Paper Company's industrial relations department, stressing its safety program. The company takes particular pride in its 1947 safety record which showed about one-half that of the average paper mill in the country. It also has an apprentice program in conjunction with the state industrial commission at the state vocational schools in the area —the only program like it in the state, so far as he knows, he said.

Powell River Earned $6 Million in 1947

(Continued from page 12)

1946 and newsprint sales at 244,974 tons were up 23,692 tons. Manufacture of equipment for No. 8 paper machine is well advanced and the machine is expected to come into production late this summer.

In connection with the construction program, the report says that costs are running substantially higher than originally estimated in the line with the general experience. This program has included installation of special machinery for utilization of "forest waste" and smallwood. This material may now be harvested along with normal larger timber thus conserving forest along with normal larger timber thus conserving forest resources. During 1947, two hydraulic barker units and a whole log chipper came into full production, effecting savings in excess of ten percent in pulpwood consumption. Further savings will be brought about by changes being made in the sulphite pulp process. The company's No. 8 paper machine, it is stated, will be "the fastest and most modern in the entire newsprint industry."

An addition to the hydro power facilities, bringing total available to 95,000 H.P., cares for requirements when the expansion is completed.

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BY THE PAPER INDUSTRY

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PORO-SCREEN Filters are a practical method for filtering water direct from the river or other source. Removes sand and grit 15 times finer than 1/32". Delivers a large volume of filtered water suitable for general mill service in the processing of newsprint, box board and other coarse grades of paper stock.

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PORO-STONE Filters provide effective filtration for water required in high grade paper stock. Installed following sand filter equipment, the PORO-STONE Filter eliminates finest sand, pipe scale and all foreign matter which might impair paper quality.

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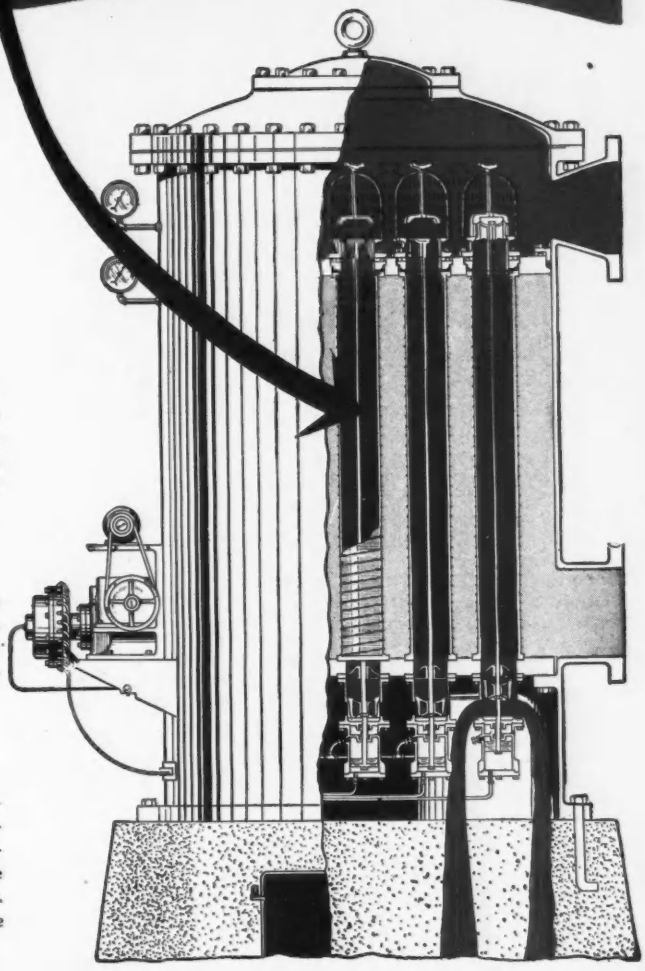
ADAMS Filters (both PORO-SCREEN and PORO-STONE) are designed for continuous, automatic operation. No moving clearances to pass foreign material—no shut-downs required by back-wash cleaning—very little attention needed. *Constant filtration assured at all times.* Built in several sizes to meet your requirements. Write for Bulletin 901.



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ADAMS PORO-STONE AND PORO SCREEN FILTERS

Jahn Presents Facts About Scandinavia

PHILADELPHIA — Professor E. C. Jahn of the New York State College of Forestry, at Syracuse, spoke at the meeting of the Delaware Valley Section of TAPPI which was held at the Engineers Club on Friday night of last week. His subject was the Scandinavian Pulp and Paper Industry—Its Problems and Its Future.

More than 50 percent, he said, of the land area of the Scandinavian countries, taken as a whole, is forested, primary with scotch pine, spruce, and birch, so that wood utilization has naturally developed into the most important industry. By the use of up-to-date mills, new equipment, and progressive technical control, high quality pulps are produced. Professor Jahn emphasized the importance which Norway, Sweden, and Finland have placed on the development of technical control and research and on their efforts to train well-qualified personnel.

These countries are primarily producers of woodpulp for export, and while they have not increased their plant capacity during or since the war, they have developed practices which assure greater flexibility in producing the various grades of pulp. Currently the mills are operating at far less than their rated capacity a condition which Professor Jahn ascribes to the fuel situation as a major factor. Because of lack of coal, it has been necessary to divert wood to heating purposes. This has also affected labor in that considerable manpower is involved in the cutting, transportation, and distribution of fuel wood. Finland is also affected by the reparations program.

The forest situation is good since these countries operate on a sustained yield basis. The wood cut does not exceed the yearly growth increment. During the war, except in a few localities, the forests were undercut, and since that time, operating with the realization that the forests are their primary asset, no overcutting has been countenanced.

Consequently it is not to be expected that production will be greatly increased in the near future nor will costs be lowered. It is probable that, depending on the world market, exports will tend toward a larger percentage of bleached and rayon grades of pulp.

Those attending the Delaware Valley Section dinner preceding the meeting were:

A. I. Andrews, E. J. Albert W. Garwood Bacon, C. O. Baetz, R. T. Bingham, A. M. L. Bixler, A. F. Bowers, Alan R. Boyd, K. W. Britt, Wm. J. Burke, J. R. Coursault, George H. Detwiler, J. C. Dieffenderfer, C. W. Dietrich August S. Erspamer, Ivar Eckholm, P. C. Evanoff, J. M. Farnum, Harry J. Farra, Jeanne Fisher, Geo. D. Fronmueller, Jane Gieker, James E. Green, L. V. Hans, J. C. Harper, Jr., Philip H. Hershey, H. F. Hoffmann, Edwin C. Jahn, Valdemar Jacobsen, George D. Knight, H. J. LeBeck, John W. MacAllister, C. S. Maxwell, M. McCane, D. Kenneth McCundy Louise E. McGrath, Alex McInnes, Byron C. Miller, Ed Molin, J. A. Paciello, Emil R. Padavic, William D. Rice, Robert Robertson, W. K. Schooterbeck, Joseph Schwenkler, Edw. A. Shallcross, Allan Schenck, G. C. Shertenlieb Robert A. Slowman, L. J. Smith, Wm. Stafford, John Steinbinder, Maxwell Stettner, Howard H. Street, George M. Suydam, James Traill, K. R. Watt, A. E. Waugh, John P. Weidner, D. A. Worrell.

New Plant Costs Eat Into Gypsum Profits

BUFFALO, N. Y.—National Gypsum Company reported first quarter earnings of $1,521,933, compared with $1,314,617 a year ago. Directors have approved sale of 422,467 shares of common stock to stockholders.

Also made public was an increase in the number of directors from eight to ten and election to the board of Charles E. Masters, vice-president in charge of finances, and Gordon H. Tarbell, who retired in March as vice-president in charge of operations.

Indicated sales for the quarter were $15,388,014, an increase of 34.2 percent over the $11,619,895 sales in the initial three months last year.

"While earnings were up over last year," said President Melvin H. Baker, "they did not reflect the increase in sales because of high costs at the four new plants. The completion of the tune-up period and the beginning of capacity operations at the new locations will bring lower costs and will later have a favorable effect on income."

New Ruberoid Contract Grants 13-Cent Increase

ERIE, Pa. — Substantial wage increases were granted to some 185 workers of the Ruberoid Company following an agreement between the company and two union locals.

A 13-cent per hour increase was given to all employes in the job classification list. Workers on the third shift were also granted an additional two cents per hour.

Other gains in the new contract include a ten percent increase for all rotating workers, one extra holiday with pay, and a change in the weekly starting time from 12:01 a.m. Sunday to 7 a.m. Monday.

Negotiating with the company was a joint committee from Local 281, International Brotherhood of Pulp, Sulphite and Paper Mill Workers, and Local 249, International Brotherhood of Firemen and Oilers.

Hudson Valley TAPPI Elects Raymond Wiles

HUDSON FALLS, N. Y.—The Hudson Valley Group of the TAPPI Empire State Section met at the Kingsbury Hotel on Friday evening, April 16th. Raymond H. Wiles of the International Paper Company, Glens Falls, N. Y., was elected chairman of the group for the coming year. Others appointed included Charles Sigvart, program committee chairman, R. D. Moynihan, entertainment committee chairman, R. J. Trimbey, publicity committee chairman, and Charles N. Hagar, membership committee chairman.

The next meeting of the Empire State Section will be held at Watertown, N. Y., on June 3-5, 1948.

The principal speaker at the meeting was Thomas Parlon of the Yale & Towne Manufacturing Company of Philadelphia, Pa., who talked on "The Paper Industry's Part in Modern Materials Handling." He stated that his firm began the manufacture of hand lift trucks because of a request by a paper converting plant superintendent. He was dissatisfied with the handling of flat paper in his plant and designed a truck that could lift loads from the floor and transport them. When this machine was put into operation it was found that eight manual handlings could be eliminated in addition to other savings.

Mr. Parlon pointed out that from 30 to 50 percent of every production hour is used for materials handling. He was rather enthusiastic concerning the development of standardized pallets.

Two motion pictures "Pheasant Fever" and "Clear Waters" were shown preceding the talk by Mr. Parlon. Henry W. Fales of the Marinette Paper Company, retiring chairman, presided.

Union Bag Reports Biggest First Quarter

NEW YORK — Union Bag & Paper Corporation reports for the three months ended March 31, 1948, net income, after provision for taxes, of $3,652,155, equal to $2.46 per share on the presently outstanding 1,483,298 shares of capital stock. This compares with $2,671,941 or $2.10 per share in the first quarter of 1947 on the 1,271,437 shares then outstanding, and with net income, after year-end adjustments, of $2,969,183, or $2.01 per share on the 1,483,298 shares outstanding in the fourth quarter ended December 31, 1947.

Net sales for the first quarter amounted to $19,386,267, an increase of 36 percent over the $14,289,575 of sales in the first quarter of 1947.

The sales and net income for the first quarter of this year were the largest for any quarterly period in the company's history. The report also points out that the sales for the first three months were at an annual rate 22 percent above net sales last year.

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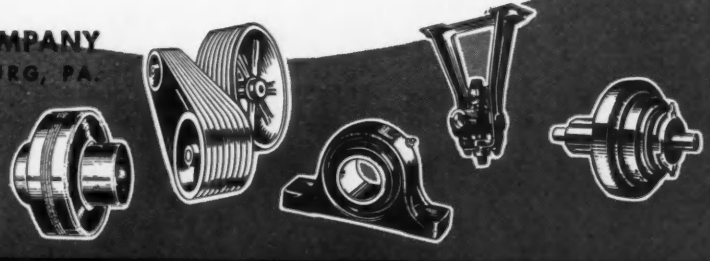


BRANCHES: BOSTON, MASS. NEWARK, N. J. PITTSBURGH, PA. CLEVELAND, OHIO DETROIT, MICH.

Finishing Department In New Quarters

PORT EDWARD, Wis. — Nekoosa-Edwards Paper Company has announced the beginning of operations in their new Nekoosa finishing department. Finishing personnel and equipment are now housed in new modern quarters south of, and adjacent to, the Nekoosa shipping department.

The new finishing department building is another step in the Nekoosa-Edwards postwar expansion and modernization program. It is a two-story brick building measuring 110 by 130 feet and is of a design harmonizing in architecture and style with other buildings making up the Nekoosa pulp and paper mills. Ample lighting is supplied through the use of glass block windows throughout the building, and ventilating equipment is of the very latest and most efficient design.

The new finishing department building serves a two-fold purpose. It provides increased floor space for the greater quantities of paper being converted to sheets and cut sizes in the Nekoosa mill. It also provides the needed space for expanding the machine room by vacating the area at the dry end of the paper machines where the department was formerly located.

IMPROVED FACILITIES

The first floor or sub-ground level of the new building is to be used for wrapper and carton storage, and for the production of cut sizes and similar converting operations. The second floor houses the multiple-roll sheeters and guillotine ream cutters. Also provided is ample space for sorting and counting operations and the converting of special items. A new overhead crane operates above this floor for handling sheet rolls.

New offices are provided in the finishing department for the finishing staff and mill production clerks. New, modern locker and rest rooms are also included for finishing department personnel. No detail has been overlooked in making the new finishing department among the most modern and efficient in America. The Nekoosa finishing department is under the supervision of Dick Tracy.

Frieden Moves Into New Research Lab.

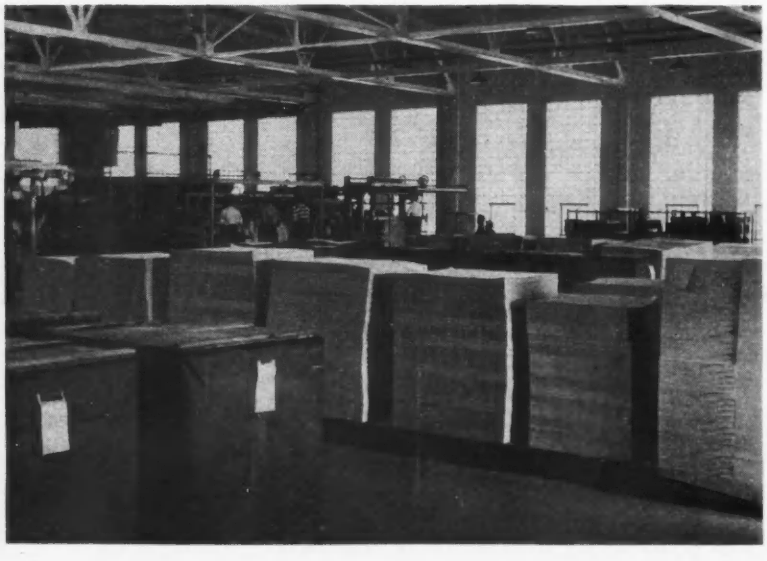
MILWAUKEE, Wis. — Dr. Alexander Frieden, director of research of the Pabst Brewing Company, is now moving his organization into the newly completed Research Building, which has been under construction during the past eighteen months. The building is of yellow brick construction, has three floors and is completely air conditioned. It is located on the corner of 11th and McKinley, in Milwaukee, within the confines of "Pabst City."

The entire building covers about 30,000 sq. ft. Approximately 5,500 sq. ft. of the first floor is taken up by the pilot plant. The remainder of the first floor, with offices and the Engineering Laboratory. The second and third floors are devoted to laboratories and to service units for the laboratories.

Hooker Declares Dividend

NIAGARA FALLS, N. Y.—A quarterly dividend of $1.06 a share on the $4.25 cumulative preferred capital stock of the Hooker Electrochemical Company, payable June 25 to stockholders of record at the close of business June 2, was declared by the board of directors.

The directors also declared a dividend of 30 cents a share on its common capital stock, $5 par value, payable May 27 to stockholders of record as of the close of business May 3.



Collins Mill Suffers $100,000 Fire Damage

NORTH WILBRAHAM, Mass.—A flash fire, started by an exploding drum of peroxide compound, recently swept the stockroom of the Collins Manufacturing Company, papermakers, causing damage estimated at more than $100,000 by Paul C. Bast, president and treasurer of the company.

The drum was being trucked across the stockroom floor and fell from the truck. It exploded when it hit the floor. Four more explosions followed in quick succession as other drums in the room let go. The room instantly became a mass of flames. The trucker and his helper, both of whom were near the fire doors, managed to escape without serious injury.

The sprinkler system went into immediate operation and 83 heads were pouring water on the blaze in a few seconds.

The Wilbraham Fire Department responded to the alarm with both pumpers, and laid six hose lines.

Smoke and fumes from the burning chemicals made it virtually impossible to bring men close to the fire. In response to a call from Fire Chief Ralph E. Tupper of Wilbraham, Chief Victor M. French of Palmer brought a supply of Scott airpacks to the scene to augment the gas masks being used by the Wilbraham men. The Palmer smoke exhauster was also called into service and the flames were brought under control after a three-hour fight.

Fifty thousand pounds of finished paper stock were damaged by fire and fumes. Machinery suffered heavy damage. Raw materials were destroyed. The readied stock in the beater room helped to swell the damage.

Apartment Profits Go To Nepco Employe Club

PORT EDWARDS, Wis.—The Nepco Lake Boys and Girls Club Lodge Association will receive the first quarter operating profits of Nepco Courts, the eight-unit apartment building as an initial contribution towards 1948 operating expenditures according to an announcement issued after the last meeting of the Nepco Foundation by Nekoosa-Edwards Paper Company at the establishing of the Foundation last year.

The Nepco Lake Boys and Girls Club Lodge Association is composed of a group of interested citizens of Port Edwards and Nekoosa, Wisconsin, who supervise the operation of the Lodge on Nepco Lake. The Lodge is used each summer on a cooperative basis by the Boys Clubs and Girls Clubs of the two communities, giving the children of the communities the advantages of organized summer camping as a reward for the planned "work and play" schedule arranged for them during the vacation months.

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The light weight means easier handling, too. Only one man needed for the empty cores.

And aluminum has other advantages that pay off. The tubes, reinforced with steel end inserts are dimensionally stable. No warping or twisting. Paper feeds out true all the way to the end . . . and paper *can* be used right down to the core. No danger of tubes cracking or collapsing in shipment—they're tough.

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Office of the PAPER TRADE JOURNAL,
Wednesday, April 28, 1948.

Concern is being expressed in the industry that United States dollars may be used to purchase Scandinavian pulp for European countries under the Economic Cooperation Administration and thus divert quantities from United States mills. Writing on the wood pulp situation in the Industry Review, the United States Department of Commerce says that "If the menacing potentialities of the political situation in northern Europe are disregarded, reports in general reflect a measured optimism concerning the near-term future of the wood pulp industry and the possibility that a reasonable quota of the export surplus will be available to the U. S. European wood pulp requirements are not expected to cut down supplies of north European pulp available to the United States. In fact, it is anticipated that even slightly larger quantities of such pulp may be available to the U. S. buyers in 1948 than in 1947. Whether U. S. buyers will take such offerings at prevailing high prices remains to be seen."

"Pulp costs are becoming an increasingly significant factor to many of the non-integrated mills, "the report continues, "since the revival of competitive pricing has made it necessary for them to restrict their raw material costs to a level approximating that of their friendly adversaries in the integrated field. This renewed competition in the sale of many varieties of paper and board is directly responsible for the growing unwillingness of pulp purchasing mills in the United States to continue paying the relatively exorbitant prices for overseas pulp." Neither is there any "intimation in industry circles of any reduction in overseas pulp prices. The prices of Swedish dissolving pulp, the exportation of which has risen during the past ten years until it now comprises more than half of the total offshore shipments of bleached sulphite, is now reported to be lower than that for bleached sulphite paper grade. The rising cost of bleaching in Sweden points to an increased production and sale of the unbleached grades."

Concerning the 316,000 short tons of wood pulp scheduled for shipment from Canada for European countries under the E.C.A., it is reported that this quantity will not disturb supplies for U. S. consumption, the amount being considered insignificant in view of Canada's total exports and potential production. During 1947, U. S. imports of Canadian wood pulp were 22 per cent greater than in 1946, while during the first two months of 1948 mill receipts of market pulp from Canada were six percent ahead of the same period of 1947. "Most of the new pulp mills recently built and to be built in Canada will produce pulp for affiliated companies, the Department of Commerce advises, but some of the new pulp, almost entirely of the sulphate grades, will no doubt be available for pulp purchasing mills in the U. S. The latter, however, do not look to Canada for major increases in the present market pulp supply."

March 1948 overseas imports show an overall drop of 50 percent from February, with Sweden showing the largest decline as a result of frozen ports. Imports from Finland gained 43 percent in March over February, while Norway's were moderately higher. Pulp imports from northern Europe during the first quarter of 1948 were 85 percent greater than in the same period of 1947.

UNITED STATES IMPORTS OF WOODPULP
(Preliminary Figures)
March 1948

Commodity	Country of Origin	(Short tons)
Mechanically ground woodpulp		
Unbleached	Canada	20,755
	Sweden	392
	Finland	2,238
		23,385
Screenings	Canada	478
Bleached	No transactions	
Chemical woodpulp		
Sulphite, unbleached	Canada	42,230
	Sweden	5,323
	Finland	10,125
		57,678
Screenings	Canada	951
Sulphite, bleached	Canada	22,784
Rayon and special	Sweden	516
chemical grades	Norway	483
	Finland	1,124
		24,907
Other	Canada	25,051
	Sweden	5,130
	Norway	1,887
	Finland	1,241
		33,309
Sulphite, unbleached	Canada	15,572
(Kraft pulp)	Mexico	177
	Sweden	4,730
	Finland	18,188
		38,667
Sulphate, bleached	Canada	20,945
	Sweden	5,061
		26,006
Soda pulp, unbleached and bleached	Canada	2,377

Newsprint

Newsprint to meet the requirements of the E.C.A. will largely be drawn from Canada's increased production, it is reported. None of the 289,000 short tons set as the quota for the next fifteen months will be exported from the United States.

During 1947, total newsprint shipments overseas from Canada were 531,375 tons, and from Newfoundland 169,464 tons, compared with 534,257 tons and 150,513 tons respectively for the year 1946, and with 477,596 tons and 157,557 tons for 1939.

The House last week sent to the Senate a bill extending until June 30, 1949 the temporary law giving duty-free status to nine-inch standard newsprint.

Waste Paper

Although the Eastern mills continue to consume much more waste paper than in last year, the supply of waste paper is plentiful. For the first sixteen weeks of the year, collections were 3.2 percent higher than in the comparable period of 1947, and 12.5 percent higher than in 1946. During the same period, consumption ran ahead of last year by 4.7 percent, and 18.7 ahead of 1946, according to report from the Eastern Conservation Committee. Eastern mills purchased 3.6 percent more waste paper during the first three weeks of April than during the same weeks of 1947, and 13.6 percent more than in 1946.

With ample supplies available locally, mills reportedly obtained waste paper from dealers close by, thus saving transportation costs but with the result that there is an oversupply of some grades in the metropolitan markets. Low bulky grades are particularly soft though prices are quotably unchanged.

Old corrugated is less plentiful but sufficient to keep pace with restricted orders coming from the mills. Prices on this grade are firm.

Colored ledgers are somewhat softer, white ledgers in brisk sale. High grades are in persistent demand and move freely. Mixed book is considered in good supply, while No. 1—free of groundwood and magazines—is in good demand and poor supply.

Emphasis placed on quality of pack appears to have brought some results, but mills report many rejections for both quality and moisture. Quality packed waste paper of virtually all grades found ready purchasers, according to Director Colley S. Baker of the Eastern Conservation Committee.

It is considered likely that some disturbance in the market may result from Canada's removal of restrictions on the export of waste paper. Previously waste paper exports had been limited to ten grades not marketable in Canada, but permits are no longer required for the export shipment of waste paper. U. S. market prices of high grades have been approximately double those in Canada.

Paperboard

Paperboard production during the week ended April 17 dropped 3.7 behind the previous week but was 5 percent above the corresponding week

(Continued on page 44)

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If you're working with Kraft, just add UFORMITE 467 at the beater.

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PRICES

The quotations given below are indicative of trends in an open market. At the moment they can be of little more value for while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—
Rolls, contract .... $93.00/$96.00
Sheets 108.00/109.00

Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.25/ 8.00
Standard Wrapping	6.50/ —
Standard Bag	6.50/ —

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.

Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2.00
Wh. No. 1½	1.60/ —
Wh. No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Manila No. 2	1.62/ —
Shred. Wh. No. 1 cwt.	1.10/ 1.50

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$8.50/$10.00
Bleached	8.50/ 10.00

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9¼	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15

Manila—per cwt.—C-l. f.a.

No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila	9.75/ —
5 lb. Manila	10.75/ 11.25

Boards, per ton—

Plain News	$92.50/ —
Filled News	94.00/ —
Plain Chip	90.00/ —
Sgl. Mla. L-d. Chip*	100.00/102.50
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	100.00/ —
Kraft Corr. .009	105.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, 16 lb.

Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delievered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Reg. No. Kraft	125.00/ —
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Siderums Pulping News	80.00/ —
Hardwood and Specialty Grades	Nominal

Swedish Quotations
On dock, Atlantic Ports

Bleached Kraft	185.00/195.00
Bleached Sulphite	185.00/195.00
Unbleached Sulphite	155.00/175.00
Unbleached Kraft	147.50/165.00

Finnish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commision)

White Shirt	$12.00/$12.50
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.50/ $6.00
No. 1 Whites Miscellaneous	4.50/ 5.00
No. 2 Whites Repacked	3.50/ 3.75
No. 2 Whites Miscellaneous	3.00/ 3.50
Blue Overalls	3.75/ 4.00
Thirds and Blues Repacked	3.25/ 3.50
No .1 Roofing Rags	1.90/ 2.00
No. 2 Roofing Rags	1.75/ 1.85
No. 3 Jute Bagging	1.60/ 1.75
No. 4 Brussels and hard back carpets	1.65/ 1.75
No. 5A Roofing Rags	1.65/ 1.75

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$5.50/ $5.75
New Mixed Cuttings	6.25/ 6.50
Light Silesias	9.25/ 9.50
Light Flannelettes	9.25/ 9.50
New White Cuttings	12.00/ 13.00
New Unbleached Cuttings	12.25/ 13.00
Fancy Shirt Cuttings	6.50/ 7.00
Light Prints	7.75/ 8.00
Bleachable Khaki, No. 1	7.00/ 7.50
Unbl. Khaki, No. 1	6.25/ 6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.
No. 1 White Linens	$14.00/$16.00
No. 2 White Linens	12.00/ 13.00
No. 3 White Linens	8.00/ 9.00
No. 4 White Linens	8.00/ 9.00
No. 1 White Cottons	8.00/ 10.00
No. 2 White Cottons	7.00/ 8.00
No. 3 White Cottons	6.00/ 6.50
No. 4 White Cottons	4.00/ 4.50
Extra Light Prints	6.50/ 7.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	3.75/ 4.25
Dutch Blue Cottons	5.25/ 5.50
Checks and Blues	4.00/ 4.25
Linsey Garments	2.50/ 2.65
Dark Cottons, European	2.40/ 2.50
Dark Cottons, Egyptian	3.25/ 3.50
Old Shopperies	2.20/ 2.30
New Shopperies	2.40/ 2.50

Bagging

(Prices to Mill, f.o.b. N.Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$6.50/ $7.00
Domestic Gunny, No. 1	6.75/ 7.25
Heavy Wool Tares	6.25/ 6.50
Heavy Wool Tares	6.00/ 6.25
No. 1 Scrap Bagging	5.50/ 5.75
Roofing Bagging	1.75/ 2.00
Foreign Manila Rope	6.00/ 6.75
Domestic Manila Rope	6.50/ 6.75
Jute Strings	5.00/ 5.25
No. 1 Sisal Strings	5.25/ 5.50
Mixed Strings	1.75/ 2.50

Waste Paper

Base Prices to Mills for Average Packings
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$155.00/$165.00
No. 1 Hard White Envelope Cuts	145.00/ 155.00
No. 1 Hard White Shavings, unruled	145.00/ 155.00
No. 1 Hard White Shavings, ruled	110.00/ 130.00
Soft White Shavings, one cut	145.00/ 155.00
No. 1 Soft White Shavings	135.00/ 145.00
Soft White Shavings, Misc.	125.00/ 135.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Groundwood Fly Leaf Shavings	35.00/ —
N. 1 Heavy Books & Magazines	25.00/ 26.00
Mixed Books	15.00/ 18.00
No. 1 White Ledger	75.00/ 80.00
Manila Tab. Cards	95.00/ 100.00
New Manila Envelope Cuttings, one cut	100.00/ 110.00
New Manila Envelope Cuttings	65.00/ 75.00
Extra Manilas	25.00/ 30.00
Mixed Kraft, Env. & Rag Cuttings	75.00/ 85.00
Kraft Envelope Cuttings	110.00/ —
Triple Sorted, No. 1 Brown Soft Kraft	65.00/ 75.00
New Kraft Corrugated Cuttings	70.00/ 75.00
No. 1 Assorted Old Kraft	50.00/ 55.00
New Jute Corrugated Cuttings	27.00/ —
Old 100% Kraft Corrugated Containers	35.00/ 40.00
No. 1 News	13.00/ 14.00
No. 1 Mixed Papers.	10.00/ 11.00
Box Board Cuttings	— / —
White Blank News	75.00/ 85.00
Overissue News	16.00/ 17.00
Old Corrugated	20.00/ 22.00
Mill Wrappers	22.00/ 24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished— India	.33¾/ .35
Fine India	.38¾/ .42½
Fine Polished	
Unpolished— Paper Makers	.28¾/ .30¾
Tube Rope	.29 / .31½
Wrapping	.32 / .33¾
Cotton	.63¾/ .66¾

(Hard Fiber)

Mex. Sisal	.21 / .27
Manila (Reprocessed)	.30 / .32

(American Hemp)

Polished Hemp	.36¾/ .60
Unpolished	.32¾/ .54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings— New White No. 1	.11 / .12
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06½/ .07
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Cotons—According to grades— Washable Shredding	.03½/ .04
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal
Khaki Cuttings— Unbleachable Cotton Cuttings	.06 / .06½
Bleachable Cotton Cuttings	.07 / .07½
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues— Miscellaneous	2.25 / 2.50
Repacked	2.75 / 3.00
Roofing Stock— Foreign No. 1	nominal
Domestic No. 1	1.85 / 1.90
Domestic No. 2	1.75 / 1.80
Roofing Bagging	1.65 / 1.70
Old Manila Rope	6.25 / 6.50

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1 —Repacked	4.50 / 5.00

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1— Foreign	nominal
Domestic	4.75 / 5.25
No. 1 Clean Bright— Sisal Strings	.04½/ .05
No. 2 Clean Bright— Sisal Strings	.03½/ .04
Sisal Jute	.02¼/ .03
Scrap— No. 1	5.00 / 5.50
No. 2	2.50 / 3.00

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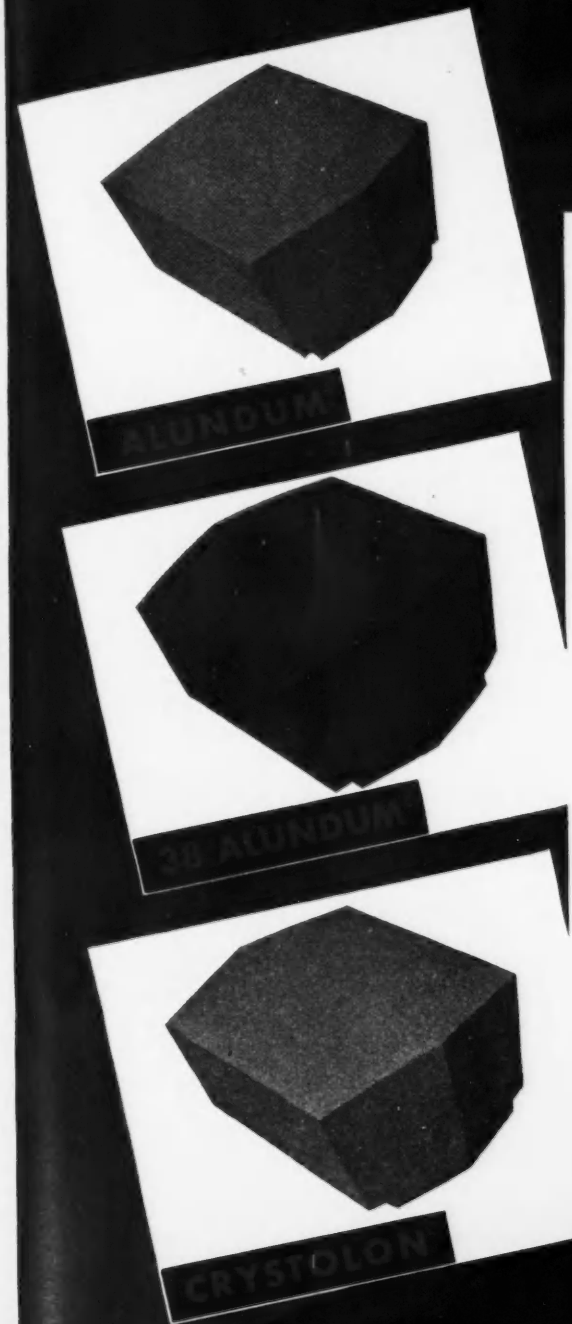
To Produce Your Kind of Pulp



YES, every Norton Pulpstone is individually engineered to produce just the type of pulp that you require—and this engineering starts with the selection of the right abrasive. Whether it will be ALUNDUM, 38 ALUNDUM, or CRYSTOLON abrasive depends on the kind of wood you are grinding and the type of equipment you are using.

ALUNDUM abrasive is an aluminum oxide product—made by fusing the mineral, bauxite in arc-type electric furnaces at 3700° F. Its hard, tough grains produce a high quality pulp.

38 ALUNDUM abrasive is also an aluminum oxide product but with somewhat different chemical and physical properties which make it especially suitable for producing certain types of pulp.

CRYSTOLON abrasive is a silicon carbide product made by fusing metallurgical coke and silica sand in resistance-type electric furnaces. Its characteristics of hardness and sharpness have made CRYSTOLON stones well known for many years as high producers of quality pulp.

You can be sure that Norton can furnish just the right stone for every grinder in your mill.

NORTON COMPANY, WORCESTER 6, MASS.
NORTON COMPANY OF CANADA, LTD., HAMILTON, ONTARIO

NORTON ABRASIVES

Wool Tares, heavy	4.75	/ 5.00
New Burlap Cuttings	6.00	/ 6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	/$115.00
No. 1 Hard White Shavings, unruled	100.00/	—
Soft White Shavings, One cut	90.00/	95.00
White Blank News	75.00/	—
Soft White Shavings	80.00/	—
No. 1 White Ledger	85.00/	90.00
Ledger, Colored	70.00/	72.00
No. 1 Heavy Books & Magazines	24.00/	26.00
Overissue Magazines	nominal	
New Manila Envelope Cuttings	80.00/	—
No. 1 Assorted Old Kraft	60.00/	65.00
No. 1 Mixed Paper	11.00/	12.00
Box Board Cuttings	10.00/	11.00
Kraft Corrugated Cuttings	90.00/	100.00
Old Corrugated	24.00/	26.00
Overissue News	20.00/	22.00
No. 1 News	13.00/	15.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	/ 6.75
No. 1 Hard White Shavings, ruled	6.00	/ 6.50
Soft White Shavings, Misc.	6.00	/ 6.25
No. 1 Fly Leaf Shavings	—	/ —
No. 2 Fly Leaf Shavings	4.25	/ —
No. 1 Groundwood Fly Leaf Shavings	1.75	/ 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	/ 1.75
Mixed Colored Shavings	2.00	/ 2.25
New Manila Envelope Cuts, one cut	4.50	/ 4.75
Hard White Envelope Cuts, one cut	7.00	/ —
Triple Sorted No. 1 Brown Soft Kraft	3.75	/ 4.00
Mixed Kraft Env. & Bag Cuttings	4.00	/ 4.25
Kraft Envelope Cuttings	5.00	/ 5.50
No. 1 Heavy Books & Magazines	1.75	/ —
New Manila Envelope Cuttings, one cut	—	/ —
New Manila Envelope Cutings	4.00	/ 4.25
White Tabulating Cards	5.00	/ —
Groundwood Tabulating Cards	1.50	/ 1.75
White Blank News	2.25	/ 2.50
No. 1 Assorted Old Kraft	3.50	/ 4.00
No. 1 Mixed Paper	.60	/ .65
Overissue News	.90	/ 1.00
No. 1 News	.70	/ .75
Box Board Cuttings	.60	/ .70
New Corrugated Cuttings, Kraft	2.75	/ 3.00
Old Kraft Corrugated Containers	2.00	/ 2.25
Old Corrugated Containers	1.25	/ 1.30
Jute Corrugated Cuttings	1.07½/	—
Paper Strings	2.00	/ 2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	—	/ 4.75
Domestic	—	/ 4.75
Sisal Rope No. 1	6.00	/ —
Sisal Rope, No. 2	5.50	/ —
Mixed Rope	5.25	/ —
Mixed Strings	2.00	/ 2.50
Transmision Rope—		
Foreign	nominal	
Domestic	3.00	/ 3.50
Manila Rope—		
Foreign	nominal	
Domestic	6.25	/ —
Soft Jute Rope	5.00	/ 5.25
Jute Carpet Threads	6.00	/ —
Bleachery Burlap	8.50	/ 9.00
Scrap Burlap—		
Foreign	—	/ 4.75
Domestic	—	/ 4.87½
South America	5.25	/ —
Wool Tares		
Foreign	4.75	/ —
Domestic	4.75	/ —
Asst. Wool Pouches	5.00	/ 5.25
New Zealand Wool Pouches	5.25	/ 5.50
New Burlap Cuttings	6.00	/ 6.50
Heavy Baling Bagging	5.25	/ 5.75
Paper Mill Bagging	3.50	/ 3.75
No. 1 Roofing Bagging	1.75	/ —

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints	.07½/	—
Fancy Percales	.08	/ —
New White No. 1	.11	/ .11¼
New Light Flannelettes	.08	/ .08½
Canton Flannels, Bleached	.10	/ .11
Underwear Cutters, Bleached	.11½/	—
Underwear Cutters, Unbleached	.11	/ .12
Silesias No. 1	.08	/ .08½
New Black Silesias	.04½/	—
Red Cotton Cuttings	.05	/ —
Blue Overalls	—	/ .08½
Soft Unbleached	.11	/ .12
Blue Cheviots	.08½/	.09
Fancy	.06	/ —
Washable	.06	/ —
Khaki Cuttings	.06½/	.07½
Corduroy	.03½/	—
Men's Corduroy	.04½/	—
Ladies' Corduroy	.04	/ —
Khaki Canvas	—	/ .06
B. V. D. Cuttings	.11½/	—

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	3.80	/ —
Miscellaneous	3.20	/ —
White No. 2—		
Miscellaneous	2.65	/ —
Twos and Blues, Repacked	2.20	/ —
Old Blue Overalls	2.25	/ 2.50
Thirds and Blues,		
Repacked	2.20	/ —
Miscellaneous	1.80	/ —
Black Stockings	3.50	/ 4.00
Roofing Stock—		
No. 1	1.85	/ —
No. 2	1.75	/ —
No. 3	1.65	/ —
No. 4	1.65	/ —
No. 5, Quality A.	1.35	/ —
Quality B.	1.20	/ —
Quality C.	.95	/ —
Old Manila Rope	6.00	/ —

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	$150.00/	—
No. 1 Hard White Shavings, runruled	140.00/	—
No. 1 Soft White Shavings	120.00/	—
No. 1 White Ledger	85.00/	—
No. 1 Heavy Books & Magazines	35.00/	—
White Blank News	80.00/	85.00
Mixed Kraft Env. & Bag Cuttings	90.00/	110.00
No. 1 Assorted Old Kraft	35.00/	—
Overissue News	24.00/	—
No. 1 News	21.00/	—
No. 1 Mixed Paper	13.00/	—
Old Corrugated	26.00/	—
Mill Wrappers	17.00/	—

MARKETS

BLANC FIXE — Demand heavy. Prices firm. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per lb., l.c.l., deld.; by-product $75 per ton, car lots at works, 6 cents per lb., l.c.l., deld.

BLEACHING POWDER — Supply adequate. Delivery good. Prices range from $3.75 to $4 per 100 pound drums, l.c.l. works.

CASEIN — Argentine market shows further strength. Domestic production makes light flurry. Flush season tardy. Current prices on processed acid precipitated casein at 31 to 33 cents per pound for domestic grades and 29½ to 31 cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA—Labor strike has worsened supply. Demand heavy. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 to $4 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.25 per cwt.; liquid 73 percent in tank cars at $2.35 per cwt., at works.

CHINA CLAY—Domestic grades and imported in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

CHLORINE — Production cutback by labor condition. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt., in multi-unit tank cars, f.o.b. works.

ROSIN—Active export inquiry with foreign and domestic buying improving. Bad weather delays new crop. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah: B, $6.50; G, $6.87; H, I, K, $7.05. Wood rosin, per 100 pounds net, car lots, f.o.b. Savannah: B, $4.50 to $5; FF, $5.50 to $6.

ROSIN SIZE — Seventy percent, gum and pale wood grades. Supply ample. Demand good. Tank cars $5.75 to $6, f.o.b. southern shipping point.

SALT CAKE—Demand continues ahead of supply with slight improvement in shipments. Prices unchanged. Domestic salt cake is quoted at $20 to $26.

SODA ASH—Supply worsened by strike. Deliveries behind schedule. Current prices, car lots, per 100 pounds; in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

SODIUM BICARBONATE—Strong demand with supply somewhat tighter. Reported as $1.85 per cwt. paper bags, carload lots.

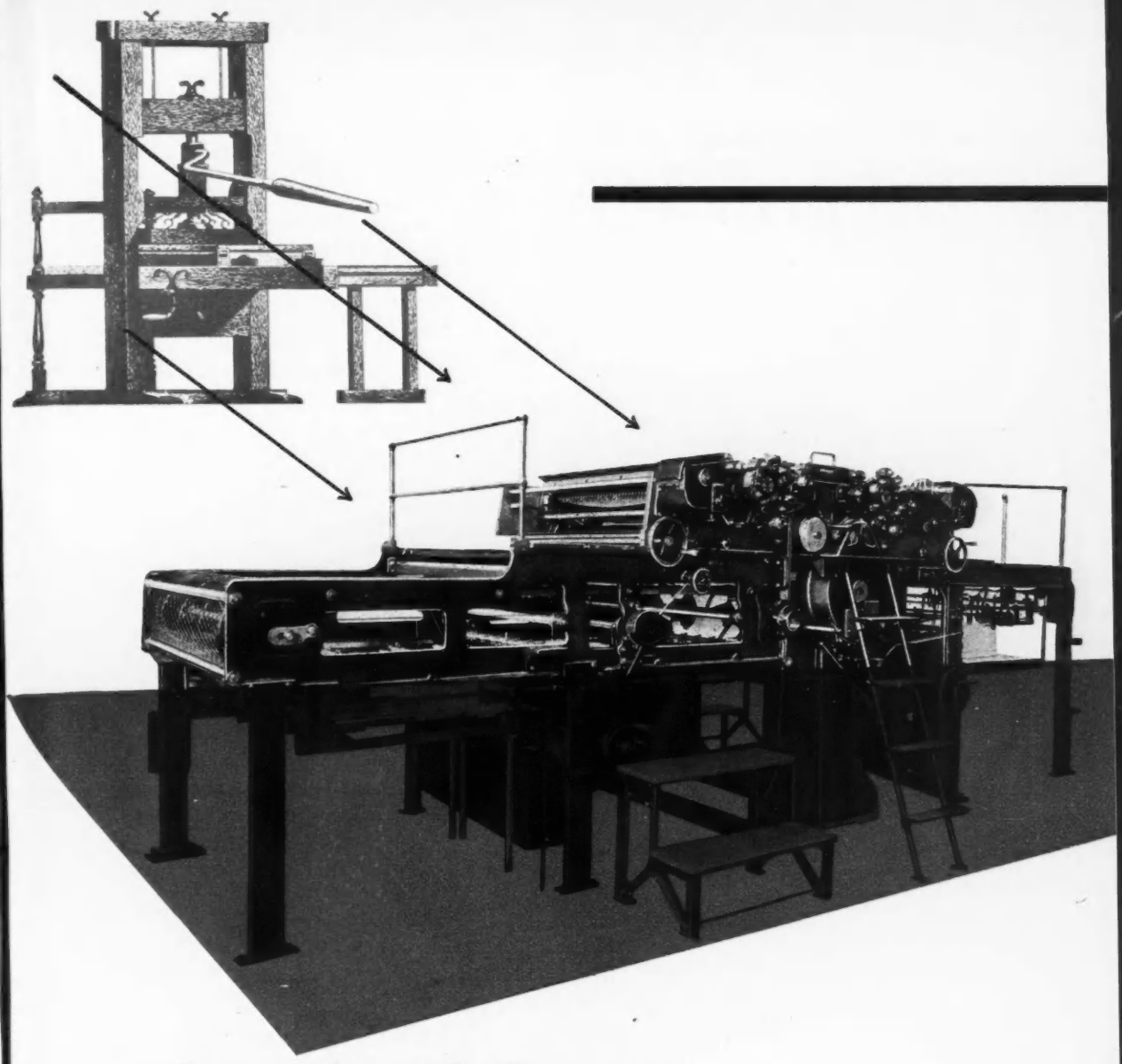
STARCH—Supply plentiful. Demand easier. Active export inquiry. Pearl grade quoted at $6.96 per 100 pounds; powdered starch at $7.07 per 100 pounds; car lots, New York.

SULPHATE OF ALUMINA—Prices unchanged. Supply steady. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2 per 100 pounds in bags, car lots, at works.

SULPHUR—Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports it $17.50 to $19.50 per long ton.

TALC — No change in domestic market. Demand far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

TITANIUM DIOXIDE—Market unchanged. Extremely tight supply. No early easing seen in situation. Shipments on allocation. Anastase 17½c lb. carload lots, 18-18½c l.c.l., rutile, 19½c lb. carload lots, 20-20½c l.c.l.; 50-lb. bags, f.o.b. plant, minimum freight allowance.



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IMPORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 24, 1948

SUMMARY

Newsprint	9518 rolls, 110 pkgs.
Gummed Paper	64 cs.
Serviettes	8 crates
Drawing Paper	5 cs.
Wrapping Paper	106 rolls
Kraft Paper	107 rolls
Wallpaper	21 cs.
Tissue Paper	36 cs.
Coated Paper	16 cs.
Sulphite Paper	347 rolls
Copy Paper	10 cs.
Rice Paper	1 cs.
Vifstaboard	4 cs.
Miscellaneous Paper	2091 rolls

NEWSPRINT

N. Y. World Telegram, Lovdal, Pt. au Basques, 927 rolls.

N. Y. Sun, Lovdal, Pt. au Basques, 413 rolls.

Pagel Horton & Co., Inc., Stavangerfjord, Oslo, 82 rolls.

St. Petersburg Printing Co., Stavangerfjord, Oslo, 116 rolls.

News Syndicate Co., Colabee, Baie Comeau, 7515 rolls.

D. C. Andrews & Co., Blidendyk, Rotterdam, 366 rolls.

E. DeVries & Co., Blidendyk, Rotterdam, 99 rolls.

(———), Mormacpenn, Abo - Turku, 454 rolls, 110 pkgs.

GUMMED PAPER

B. F. Drakenfeld & Co., Parthia, Liverpool, 20 cs.

B. F. Drakenfeld & Co., American Scout, Liverpool, 44 cs.

SERVIETTES

(———), Parthia, Liverpool, 8 crates (crepe paper).

DRAWING PAPER

S. Stern Henry, Union Victory, Antwerp, 5 cs.

WRAPPING PAPER

Bank of The Manhattan Co., Mormacpenn, Gothenburg, 106 rolls.

KRAFT PAPER

East Coast Paper Products Corp., Mathilda Thorden, Gothenburg, 107 rolls.

WALLPAPER

Hudson Shipping Co., De Grasse, Havre, 21 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., American Scout, Liverpool, 18 cs.

B. F. Drakenfeld & Co., American Manufacturer, Liverpool, 18 cs. (gauze carbonizing).

COATED PAPER

F. P. Gaskell & Co., American Scout, Glasgow, 16 cs. (for cigarette tips).

SULPHITE PAPER

B. Lynch, Gripsholm, Gothenburg, 347 rolls (glazed).

COPY PAPER

Stevens Nelson Paper Corp., Tigre, Kobe, 10 cs.

RICE PAPER

Botanical Industries, Inc., Marchen Maersk, Keelung, 1 cs.

VIFSTABOARD

Elof Hansson, Inc., Mormacpenn, Gothenburg, 4 cs.

MISCELLANEOUS PAPER

Reynolds Metals Co., Union Victory, Antwerp, 83 rolls.

State Planters Bank Trust Co., Mormacpenn, Gothenburg, 885 rolls.

Wachovia Bank & Trust Co., Mormacpenn, Gothenburg, 227 rolls.

Resolute Paper Products Corp., Mormacpenn, Gothenburg, 145 rolls.

E. W. Twitchell, Gripsholm, Gothenburg, 117 rolls.

Resolute Paper Products Corp., Gripsholm, Gothenburg, 102 rolls.

Bank of The Manhattan Co., Gripsholm, Gothenburg, 367 rolls.

Chemical Bank Trust Co., Gripsholm, Gothenburg, 99 rolls.

National City Bank, Gripsholm, Gothenburg, 66 rolls.

RAGS, BAGGINGS, ETC.

New England Waste Co., Mormacmoon, Santos, 103 bls. cotton waste pickers.

(———), Parthia, Liverpool, 29 bls. wool rags.

A. De Vries Trading Corp., Union Victory, Antwerp, 88 bls. old bagging cotton tares.

Tradesmans National Bank Trust Co., Dimitry Dinsky, Murmansk, 2613 bls. cotton linters.

1st National Bank Chicago, Dimitry Donsky, Murmansk, 1594 bls. cotton linters, 3176 bls. cotton waste.

Amtorg Trading Corp., Dimitry Donsky, Murmansk, 667 bls. cotton waste.

R. Guzman, Agwiqueen, San Juan, 107 bls. paper stock, 17 bls. rags.

Bank of Australasia, Pioneer Gem, Melbourne, 17 bls paper stock.

E. J. Keller Co., Inc., Martha Kleppe, Bombay, 140 bls. old rags.

(———), Martha Kleppe, Bombay, 200 bls. old rags.

S. H. Waldstein, Marchen Maersk, Shanghai, 100 bls. cotton waste.

New England Waste Co., Marchen Maersk, Shanghai, 200 bls. cotton waste.

(———), American Scout, Glasgow, 43 bls. linen thread waste.

Leigh Textile Co., American Scout, Manchester, 43 bls. mixed bagging.

Leigh Textile Co., American Manufacturer, Manchester, 42 bls. bagging.

S. H. Waldstein, Tigre, Shanghai, 100 bls. cotton waste pickers.

Midwest Waste Material Co., Molda, Havre, 87 bls. rags.

J. T. Flannery, Molda, Havre, 108 bls. cotton rags.

CASEIN

Balfour Guthrie & Co., Mormacmoon, Buenos Aires, 500 bags, 25,000 kilos.

Inter Maritime Forwarding Co., Rio Aguapy, Buenos Aires, 1000 bags.

GLUESTOCK, ETC.

Morval, Inc., Mormacmoon, Buenos Aires, 400 bags hideglue.

Karr Ellis Co., Parthia, Liverpool, 303 bags hide cuttings.

(———), Agwidale, Havana, 71 bls. gluestock.

Transatlantic Animal By-Products Corp., Marchen Maersk, Hong Kong, 400 bags hideglue.

WOODPULP

Pagel Horton & Co., Inc., Mormacpenn, Gothenburg, 7 bls. woodpulp.

Perkins Goodwin & Co., Mormacpenn, Gothenburg, 1 pkge. woodpulp.

Bulkley Dunton Pulp Co., Gripsholm, Gothenburg, 1016 bls. dry string unbleached sulphite cellulose; 912 bls. dry chemical pulp.

Oscar Kohorn, Gripsholm, Gothenburg, 2 cases woodpulp.

BOSTON IMPORTS

WEEK ENDING APRIL 24, 1948

Green Textile Associates, Inc., Mormacmoon, Santos, 131 bls. cotton waste.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 24, 1948

(———), Mormacpenn, Abo - Turku, 129 rolls wrapping paper, 346 rolls newsprint.

National City Bank, Mormacpenn, Abo-Turku, 2000 bls. prime unbleached sulphite pulp.

BALTIMORE IMPORTS

WEEK ENDING APRIL 24, 1948

(———), Mormacpenn, Abo - Turku, 123 rolls newsprint.

E. W. Twitchell, Mormacpenn, Abo-Turku, 123 rolls paper.

NORFOLK IMPORTS

WEEK ENDING APRIL 24, 1948

Elof Hansson, Inc., Blidendyk, Rotterdam, 197 rolls newsprint.

Charlotte Observer, Lovdal, Pt. au Basques, 92 rolls newsprint.

Dansville Register, Lovdal, Pt. au Basques, 127 rolls newsprint.

Herald-Sun Papers, Lovdal, Pt. au Basques, 58 rolls newsprint.

Fayetteville Observer, Lovdal, Pt. au Basques, 80 rolls newsprint.

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AUSTRALIAN NOTES

PERTH, West Australia—The Commonwealth Statistician reveals that during the financial year 1945-46 there were 12 factories throughout the Commonwealth engaged in the production of paper and pulp, and the number of persons employed was 4,705. Salaries and wages for the year totaled $7,569,600; fuel and light uhed cost $2,875,-200; and value of other materials used was $18,249,000. Total value of output was $35,606,400 (all figures are Australian pounds converted to U.S. dollars at par).

Average salary and wage per employe was $1,608; value of output per person was $7,570; and ratio percent of salaries and wages to value of production was 52.28.

Materials used in pulp mills totalled: 258,953 tons of wood, 8,705 tons of straw, 56,640 tons of old or waste paper, 10.571 tons of limestone, 2,226 tons lime, 270 tons soda ash and 332 tons caustic soda. Total production of chemical, mechanical and other pulp was 82,711 tons.

Pulp used in Australian paper mills during the year totalled 120,150 tons.

Articles produced included: 93,645 tons of newsprint, blotting, duplicating, printing and writing paper and wrapping kraft; 8,309 tons of strawboard, and 63,600 tons of other boards.

Import of pulp during the year was 37,752 tons; import of paper was 127,-116 tons; and import of boards was 32,208 tons.

A planned expenditure of $14,400,-000 by Australian Newsprint Mills Ltd., Tasmania will give the company a second paper machine, a new woodmill, additions to grinders, new screen room equipment, beaters, storage tanks, new logging roads and equipment. Paper machine will be of 246 inch wire width, designed for a maximum operating speed of 1,500 f.p.m. Main features are a 100 foot machine wire, a 44 inch couch roll with double vacuum box, two 38 inch presses, 48 dryers, and a calender stack with a 34 inch diameter bottom roll. The winder will operate at up to 4,000 f.p.m.

The recent public issue of 200,000 one pound (4.80 at par) preference shares in Australian Newsprint Mills Ltd. was heavily over-subscribed three minutes after opening in Melbourne. New capital will be used to provide part of the finance to raise output from 30,000 tons to 80,000 tons a year.

As soon as the necessary permits can be obtained, the erection of new buildings for the paper-making factory of Thomas Owen & Co. (or Cardiff, Wales) will be carried out at Ballarat. The Australian manager for the firm (Mr. A. F. Parkin) recently returned from a trip to his principals in Britain.

This firm will offer 750,000 5 percent $4.80 preference shares to the public, but the initial ordinary capital of 3,000,000 five-shilling ($1.20) shares will be subscribed privately by Thomas Owen & Co. and another leading English paper-making group. Nominal capital will be $9,600,000.

Mr. W. D. Northway, representative of British Cellophane Ltd. of London, is reported to be negotiating with the Queensland Government for the establishment of a factory in that state.

Australian Paper Manufacturers Ltd., who report a net profit of $1,295,-467 for the year—the best to date—state that world shortage of pulp, delay in the delivery of new machinery, scarcity of labor, the coal problem and industrial disturbances have all stood in the way of development and the meeting of Australia's full demand for kraft and paper-board. Six new machines, four turbo-alternators and five steam boilers have been on order for some time, but delivery dates are still uncertain. Construction of a new mill in Queensland is also held up because of labour and material problems. However, the year's output from the company's five mills was 12,000 tons better at 124,495 tons (peak figure was that of 1942—130,966 tons). The pulp mill at Maryvale (Victoria) turned out a record of 38,965 tons. Australasian Paper & Pulp and Cumberland Paper Board Mills, the two holding companies which own 78 percent and 22 percent respectively of A. P. M.'s ordinary capital, maintained their ordinary dividends at 6 percent. Directors report that the introduction of the 40-hour week has reduced output.

J. Fielding & Co. Ltd., Sydney, manufacturers of cardboard boxes, cartons and corrugated-fibre containers, report a net profit of $374,265 for the year against the $344,622 of the previous 12 months. Dividend remains steady for the second year at 22½ percent. Firm is a most up-to-date and progressive one, with a paid capital of $1,-245,657, and the $4.80 shares, when they infrequently change hands, do so at $33.60. Stocks, listd at $161,160 in 1939, are now valued at $295,733.

January import of newsprint in rolls totaled 16,799 tons, valued at $2,504,-918 (par rate of exchange), an increase of 4,551 tons on the December figure, and of 3,529 tons on January, 1947.

Other imports of paper in January were: (All figures Australian hundredweights of 112 lbs.) Imitation art, 10,-015 (Sweden 3,746, U.K. 2,310, Finland 1,464, U.S.A. 856, Norway 778, Netherlands 520, Belgium 211, Canada 130); other coated printing paper, 10,751 (U.S.A. 5,429, U.K. 4,872, Canada 284, Sweden 105, Norway 61); glazed imitation parchment, 554 (U.K. 284, Sweden 270); lithographic machine glazed or one side calendered, 6,543 (Finland 2,546, Sweden 2,247, U.K. 781, Switzerland 616, Czechoslovakia 278, U.S.A. 39, Canada 36); offset embossed, 795 (Canada 523, U.S.A. 272); poster printings machine glazed, 5,299 (Finland 2,119, Sweden 1,770, Austria 486, U.K. 447, Netherlands 297, Norway 101, Czechoslovakia 79); and other printing paper, 50,573 (Finland 15,908, Sweden 9,796, U.S.A. 8,748, Canada 8,444, U.K. 4,205, Norway 2,136, Czechoslovakia 641, Belgium 489, Austria 89, Netherlands 79, France 20, India 18).

Disagreeing on the method of allocating available newsprint, several members of the Australian Newspaper Proprietors' Association have resigned and formed the Australian Newspapers Council. Daily and Sunday newspapers which have made the break (there are also a number of smaller publications) are *The Daily Telegraph, The Sunday Telegraph* (Sydney), *The Herald, The Sun-News Pictorial* (Melbourne), *The Courier-Mail, The Sunday Mail* (Brisbane), *The Advertiser* and *The News-Mail* (Adelaide). *The Sunday Times* (Perth) will also support the A.N.C.

New Zealand Forest Products plans to spend from $40 million to $50 million on large scale development of manufactures within the next 15 to 20 years, one aim being to supply Australia with her needs of long-fibered pulp for use in making newsprint and wrapping papers. Existing board mills will be enlarged by 50 percent; a chemical pulp mill with a capacity of 20,000 tons a year will be erected; output of sawmills will be increased from 13 million feet to 60 million feet a year; a draft paper mill with an annual capacity of 10,000 tons will be built; and multi-wall paper bags for the carriage of cement and superphosphate will be made. Expansion will be carried out in progressive stages, the first of which will be financed by the recent $7,250,-000 debenture issue, plus reserves. This first stage is expected to be completed by 1951, and delivery of a corrugated container plant is expected at the end of this year.

The Canadian Sumner Iron Co. has announced the signing of a large order for pulp mill equipment and machinery for Associated Pulp & Paper Mills Ltd. at Burnie. A sawmill and wood preparation plant are to be erected alongside the firm's present pulp mill.

Sir Herbert Gepp has retired from the post of managing director of Australian Paper Manufacturers Ltd. He will be succeeded by C. S. Booth, who has been assistant managing director.

E. Telford Simpson has been appointed acting chairman of Australian Paper Manufacturers Ltd. during the absence abroad of Sir Norman Brookes.

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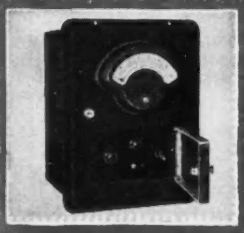

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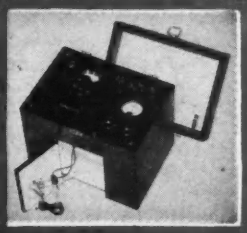

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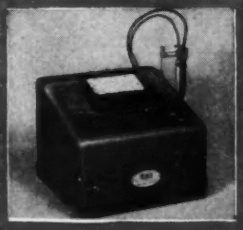

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INSTRUMENTS CONTROL MODERN INDUSTRIES

Nepco Fund Set Up Insect Control Study

PORT EDWARDS, Wis.—A $6,300 industrial fellowship for the study of insect control in stored pulpwood has been established by the Nepco Foundation, at the University of Wisconsin according to an announcement issued jointly by the Board of Regents of the University and the directors of the Nepco Foundation. Results of the three-year research, which will run until March 31, 1951, will be made public by the University.

The project has been assigned to the Department of Economic Entomology and the University has designated Dr. R. D. Shenefelt to give it his personal supervision. In addition to studying insect control in stored pulpwood, the problem of prevention of damage to adjacent timber from beetles emerging from piles of stored pulpwood will also be explored.

Because of fluctuating circumstances in the pulpwood picture of Wisconsin's paper mills, and because conditions sometimes require the storage of pulpwood for varying lengths of time, the problem of insect control is of vital economic importance to the state's second largest industry. With mills today going further afield than ever before to guarantee an adequate supply of pulpwood, every possible means of protecting the state's standing timber supply from insect attack and infestation must be exercised and it was with this thought in mind that the directors of the Nepco Foundation established the fellowship and requested publication of the findings for the benefit of the entire industry, according to a statement by John E. Alexander, president of the Nepco Foundation and president and general manager of Nekoosa-Edwards Paper Company.

The Nepco Foundation was established at Port Edwards, Wisconsin, last year as a non-profit corporation for the promotion of religious, charitable, scientific or educational activities of the inhabitants of the state of Wisconsin. Beginning with an initial contribution of $143,000 in cash and income producing property as a gift from Nekoosa-Edwards Paper Company, Port Edwards, the Foundation does not contemplate a public solicitation of funds at any time.

Marathon Foremen Meet

MARINETTE, Wis.—Modern practices of handling materials were discussed last week at a meeting of Marathon Corporation's Foremen's club. The meeting was held at the Silver Dome, with 26 members and guests present. John Fitzpatrick, materials handling supervisor of the corporation at Menasha, presented short movies on unit loading and handling of materials and the use of modern motorized tractor trucks.

F. R. DOHERTY

who has been named territorial sales manager by United Board & Carton Corporation. Before joining United last month, Mr. Doherty had been associated with Sutherland Paper Company as their representative in Columbus, Ohio and later in Philadelphia. Before that time, Mr. Doherty was with General Foods Sales Company, for nine years in Michigan and Indiana.

Six Michigan Mills to Attack Waste Problem

(Continued from page 7)

Morgan reported on results of the pilot plant operation. The plant was built about a year ago with a maximum capacity of 60,000 gallons of waste per day to determine the success of a disposal plan.

He recommended continuing study to determine "the suitability of lagooning both the primary and secondary sludge" and also "possible use of primary sludge as raw material for manufacturing building board and use of secondary sludge as a low-grade fertilizer or soil builder."

Harry W. Gehm, technical advisor for the national council, said "three serious problems still remain, and listed in the order of importance they are:

1. Disposal of sludge, which exceeds mill production in tonnage.
2. Reduction in waste volume by changes in manufacturing processes.
3. Providing an aeration system that is not subject to frequent clogging.

Chairman Adams said the de-inking mills contribute more than half of the pollution of the entire Kalamazoo river, in which the pollution load is more than six times capacity. He advised against the commission establishing a "stream standard" unless "it is done as a last resort." Such a standard might be basis for court action.

Saskatchewan Plans To Map Its Forests

TORONTO, Ont. — Starting late in June northern Saskatchewan will be photographed from the air for forest inventory and map making purposes. Natural Resources Minister J. L. Phelps has announced that more than two million acres of timber will be "shot" by aerial photographers.

"Our objective is to get more information on the vast forest areas in the north," Mr. Phelps said, "with a view to balancing the annual cut with the annual growth so that our forest capital will remain undiminished."

There are 2.3 million acres, or 3,600 square miles of timber stand in the region to be photographed. The area starts 20 miles northwest of Prince Albert, and extends south of and surrounding Dore and Sled Lakes. Last winter the department photographed and mapped 2,300 square miles, or 1,472,000 acres, in the same area.

Mr. Phelps said mapping of this district will enable the department to formulate plans for removal of merchantable timber, and aid in establishing proper fire protection.

The project is to be a three-way effort of three government branches. Saskatchewan Government Airways will provide the airplanes, with the photography to be made at between eight and 10 thousand feet. The Surveys Branch will look after the photography work, with the Forestry Branch to be in charge of estimating the amounts of timber in the various areas from the photographs taken.

Jap Mills Increased Pulp Output in 1947

WASHINGTON—Recalling a recent series of recommendations for disposition of excess capacity of various materials entering chemical production, the Army command there reports Japanese pulp production amounted to 255,366 short tons in the first ten months of 1947. This compared with 183,344 tons in the corresponding period of the previous year.

Paper production reached 260,287 tons in the same months of 1947, compared with 191,351 tons the previous year in the corresponding months.

The Japanese Pulpwood Association reported pulpwood deliveries to Japanese pulp and paper mills amounted to 3,597,562 units equal to 9.827 cubic feet each, in the first 11 months of the past year, with deliveries in November 11 percent above those of the same month of 1946.

Caustic soda output in Japan reached 14,139 metric tons in the third quarter of the past year, compared with 8,333 tons a year earlier, while soda ash production was 11,665 tons, against 4,658 for the July-September, 1946 period.

Thrifty

Langston machines save money for users because
they are *not* designed to sell at a predetermined price.
Long experience has shown us
how a Slitter and Roll Winder *should* be built.
To manufacturing costs a reasonable profit is added,
and the selling price established.
Your Langston may cost more to buy—
but it will prove much thriftier in operation.
Samuel M. Langston Company, Camden, New Jersey.

Langston

SLITTERS AND ROLL WINDERS

Kimberly-Clark Buys Plane to Save Time

NEENAH, Wis. — Kimberly-Clark Corporation has received delivery of a five-passenger, twin-engined Beechcraft D-18-S airplane. It has a range of 910 miles and a cruising speed of 200 miles an hour.

The plane will be used by Kimberly-Clark in transporting executives and other employes between its mills and offices in United States and Canada. Purchase of the craft, first to be owned by Kimberly-Clark, was completed several weeks ago.

Use of the craft will bring savings in travel expense as well as time, it was stated. There will be no regularly scheduled flights as trips will be planned from week to week, according to William Wright, director of service operations, under whose department the plane will be operated.

Studies made to show time saving possible through use of the plane revealed that the time to the corporation plants at Niagara Falls, now about 21 hours, can be reduced to two and a half hours, while the plane can take executives to Kapaskasing, Canada, in less than two and a half hours as compared to 49 hours by train. The travel time to New York City can be cut to three and three-quarter hours.

The plane also will be used for rush delivery of parts, blueprints and other materials. It has a capacity of five passengers and a crew of two, and will be based at the Winnebago county airport at Oshkosh where a hangar is to be erected. Flights will be made from that point as need requires, to Niagara Falls, New York City, Kapaskasing, Port Arthur, Atlanta, Ga., Memphis, Tenn., Birmingham, Ala., and other points.

A. P. Schnyder Joins Ebasco Services

NEW YORK—Ebasco Services Incorporated has appointed A. P. Schnyder as engineer for pulp and paper mills. Mr. Schnyder's life-time experience has been tied up with the pulp and paper industry, particularly in the utilization of steam and power generation. He was associated with the late George F. Hardy, prominent paper mill engineer, for more than twenty years, prior to which he served with several European engineering firms. He was graduated from the Federal Technical University in Zurich in 1921.

Mokros and Johnson Ready Picnic Plans

NEENAH, Wis. — Elmer Mokros and Al Johnson have been named general chairmen of the Kimberly-Clark Activities Association's picnic August 1 at Riverside park. Some of the committees also have been named.

New England Expects Freight Rate Rise

SPRINGFIELD, Mass. — Although paper manufacturers in this area have as yet received no official confirmation, it appears likely that railroads serving this district soon will increase freight rates. This move would be in line with action by the Interstate Commerce Commission in granting another temporary freight rate increase averaging about five percent on a national basis.

There has been no estimate yet of how much the increases would cost in this area.

The boosts in this area can be as high as ten percent, the ICC has ruled.

The commission said higher rates were required because of the freight business which had been lost because of work stoppages in the coal fields and other major industries, and by severe winter conditions — especially in this area—in the early months of this year.

The ICC notes that the railroads, themselves, "are now facing either the possibility of work stoppage under a strike vote already taken" or an increase in their labor costs.

"Thousands of workers on the railroads were laid off because of labor stoppages in other crafts, and curtailment of production in other basic industries for the same reasons has widened unemployment and lessened potential tonnage."

NELIO

is free from the defects of ordinary gum rosin!

NELIO Gum Rosin offers distinct advantages for the manufacture of size. It is made by scientific methods, under strict laboratory control.

NELIO offers economies In addition to its exceptional uniformity and dependability, NELIO is less expensive to handle and use.

UNIFORM
The standard grades are unvarying in color and quality. Shipment after shipment will be identical.

BRILLIANT
Assuring consistently lighter grades of paper.

DRY
No need to worry about the turpentine content of NELIO —it's very low!

CLEAN
Not a trace of dirt or foreign matter because of careful processing in stainless steel equipment.

FULL-WEIGHT
Shipped in standard, non-absorbant leak-proof metal drums, in 100 lb. net weight paper bags or in fluid state in insulated tank cars.

IF YOU NEED TECHNICAL SERVICE—We offer you a consulting service with experienced paper technicians on request.

Write for Samples and Prices

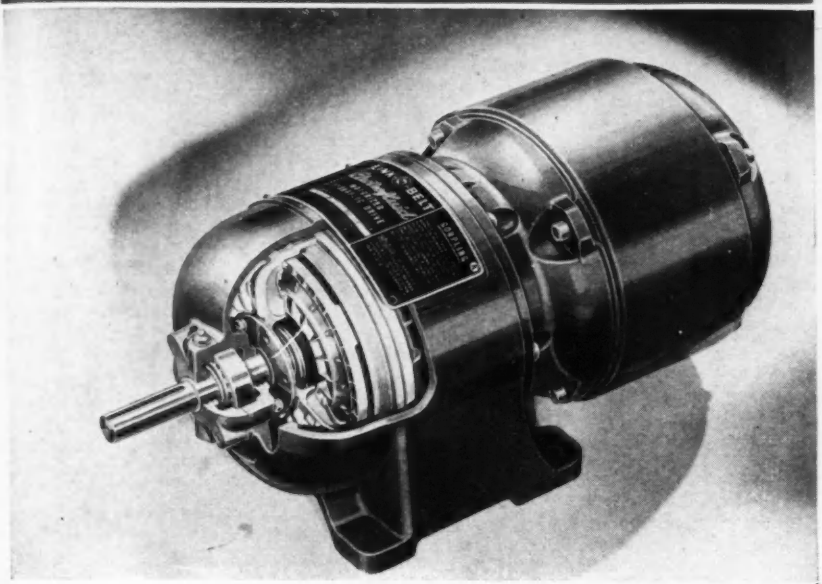
NELIO is manufactured by THE GLIDDEN COMPANY, NAVAL STORES DIVISION and sold by

E. W. COLLEDGE

General Sales Agent, Inc.
JACKSONVILLE 1, FLORIDA

NEW YORK 17	CHICAGO 4	CLEVELAND 14	SAN FRANCISCO 5
52 Vanderbilt Ave.	25 E. Jackson Blvd.	807 Guardian Bldg.	503 Market St.

TAKE *SHOCK* OUT OF TOUGH DRIVES WITH LINK-BELT *Electrofluid* DRIVE



"MOTORIZED HYDRAULIC POWER" *ASSURES* CONTINUOUS TROUBLE-FREE OPERATION!

The Electrofluid Drive combines with virtually all types of Link-Belt constant and variable speed reduction gear units and chain drives to afford shock-proof, efficient, economical transmission of power, embodying important features in starting and overload protection. Three principal advantages are:

(a) It permits the use of a smaller motor than otherwise might be required—improves power factor and overall efficiency.

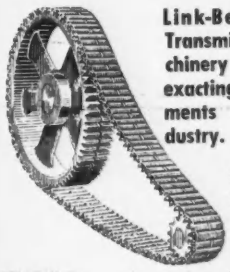
(b) It prevents damage to costly power-driven equipment and motor.

(c) It provides a smooth transmission of power, eliminating shocks which could damage material in process.

Ask for Book 2085-A giving full details and application suggestions.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities.



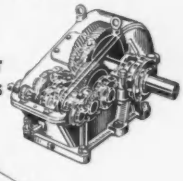
Link-Belt Power Transmission Machinery meets the exacting requirements of all industry.

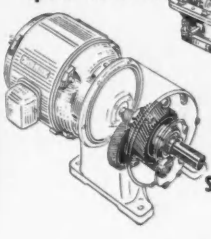
Silverstreak Silent Chain Drives

Silverlink Roller Chain Drives

V-Belt Drives

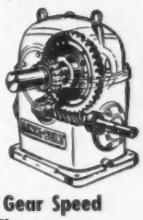
Herringbone Gear Speed Reducers

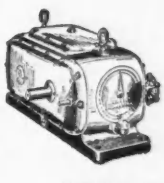




Motorized Helical Gear Speed Reducers

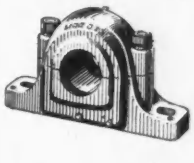
Gearmotors





PIV Gear Speed Changers

Ball Bearing Mounted Units



Roller Bearing Mounted Units

Unmounted Ball and Roller Bearings

Babbitted Bearings

10,736-A

LINK-BELT

Power Transmission Machinery

Paper Sleeve Valve Added by Bemis

ST. LOUIS—Development by Bemis Bro. Bag Company of a paper sleeve valve in Bemis Rip-Cord closed burlap bags has added to the convenience and economy of the packing operation, and aimed at increasing the re-use value of these bags. The valve burlap bags may be used on the same filling machines as valve paper bags, eliminating the need for two types of filling and closing equipment. Burlap bags fill more rapidly on the packer than paper bags, because their greater porosity permits rapid escape of air.

On the farm, the Bemis Rip-Cord closure permits fast, easy opening without damage to the bag. A quick jerk on either end of the cord gives a full or partial opening as desired. After being emptied the undamaged bag becomes a regular open mouth burlap bag which can be used as a potato pick-up sack or for any of the other normal uses of second-hand bags.

The paper sleeves, which is the distinguishing feature of these bags, is made of smooth Kraft paper and is bonded to the burlap with thermoplastic. This paper insert is placed in the mouth of the turned bag and passed through a special heat sealing machine where heat and pressure fasten it securely to the fabric. The insert and bag are then folded to form the sleeve valve. The final operation consists of sewing the top of the bag closed with the Bemis Rip-Cord Closure.

This bag has been in the experimental stages for several years and now proves to be entirely satisfactory.

WHICH OF THESE 5 PROBLEMS IS YOURS?

1. **Cooking cotton fibre for rag paper stock?** Here TRITONS 770 Concentrate and N-100 can help you. Efficient wetting agents, they remove solid soil in stocks—emulsify waxes or finishes which may be present—and aid in thorough caustic-penetration.

2. **Recovery of waste paper for re-use?** TRITON N-100 is unusually effective in de-inking and reworking the stock by cooking with caustic.

3. **Dispersing pigments or other materials in paper coatings?** TRITON N-100 efficiently disperses carbon black in the coloring of paper—levels other colors and pigments to give even shades and eliminate streaking. Useful in casein-bound coatings.

4. **Improvement in wetting of absorbent papers, tissue, toweling?** Here, again, TRITONS are useful, particularly on impregnating and wet strength grades.

5. **Washing felts?** TRITONS simplify this problem. TRITON 770 and TRITON N-100 are alkali-stable, efficient detergents, effective at low concentrations and in hard water.

These are only a few of the paper-processing jobs accomplished faster, more efficiently, less expensively with TRITONS. As wetters, dispersers, detergents and emulsifiers, this diversified family of anionic, cationic, and non-ionic surface active agents is used throughout the industry. We'll be glad to give you full information and samples. Just write . . .

Represented in South America by Cia. Rohm y Haas, S.R.L. Carlos Pellegrini 331, Buenos Aires, Argentina and agents in principal South American cities.

TRITON *is a trade-mark, Reg. U. S. Pat. Off.*

ROHM & HAAS COMPANY
WASHINGTON SQUARE,
PHILADELPHIA 5, PA.

Manufacturers of Chemicals including Plastics • Synthetic Insecticides • Fungicides • Enzymes • Detergents • Germicides • Chemicals for the Leather, Textile, Ceramic, Rubber, Paper, Petroleum and other Industries

Puget Sound Effects Two-for-one Split

BELLINGHAM, Wash—A two-for-one split in the common shares of Puget Sound Pulp & Timber Co. was authorized by the stockholders at their annual meeting held April 20, 1948. The certificate of incorporation was amended so as to authorize a total of 778,189 common shares, twice the number now outstanding. The present shares will not be called for exchange, but on July 15, 1948, new stock certificates for the additional shares will be mailed to stockholders of record July 1, 1948, representing the same number of shares as owned by them on the record date.

Further amendment to the certificate of incorporation eliminated provisions for issuance of preferred stock. Redemption of preferred shares previously outstanding was completed January 1, 1948.

At the annual meeting all directors were reelected.

Mando Sales Run Ahead

MINNEAPOLIS — Donald D. Davis, president of the Minnesota and Ontario Paper Company, stated this week that the net sales for the quarter ending March 31, 1948, were $12,585,895 as compared to $11,585,710 for the same period in 1947. Profits after taxes and after appropriation of $200,000 to the reserve for contingencies during the first quarter of 1948 were $1,500,675 amounting to $1.16 per share.

OBITUARY

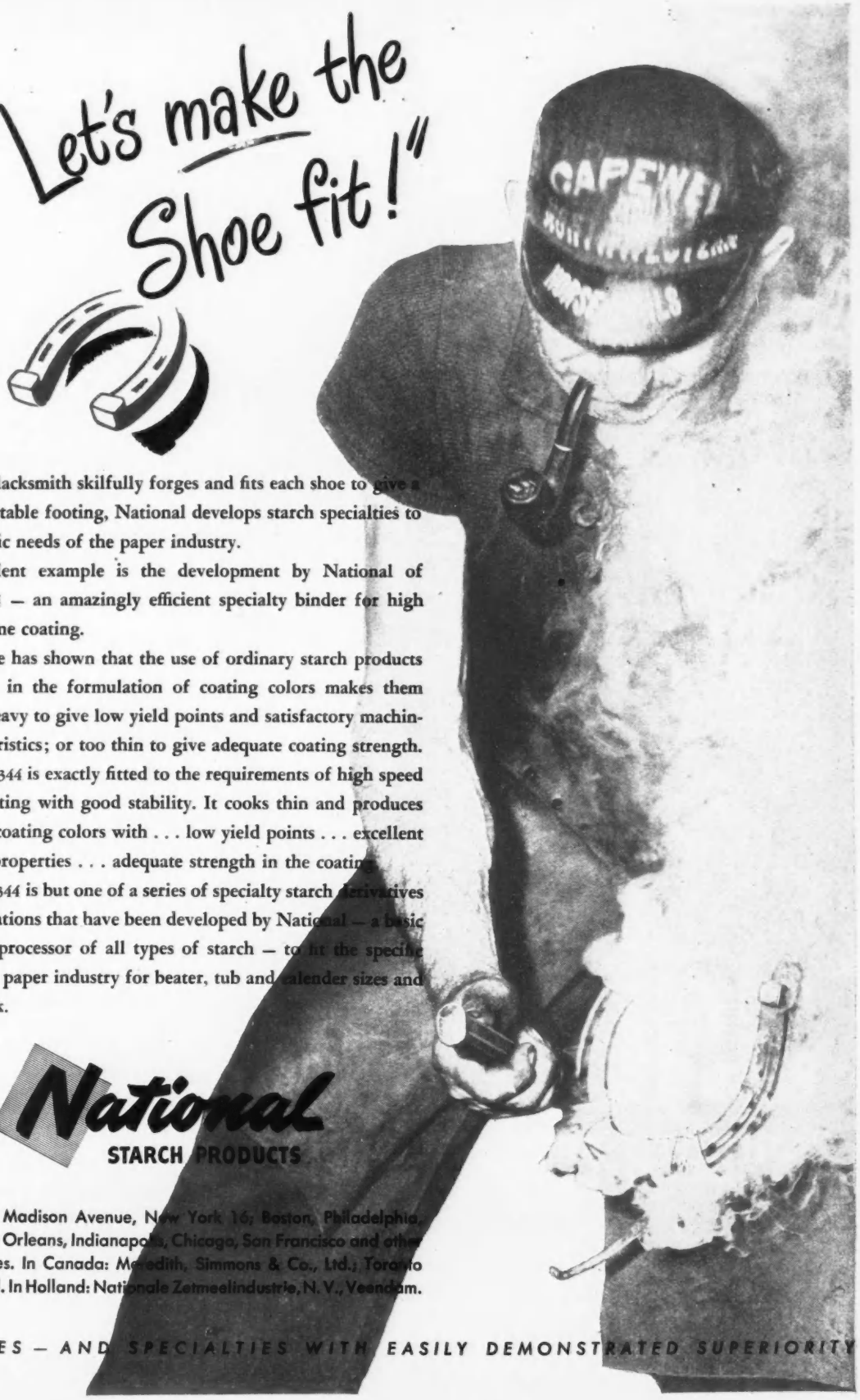
Warren J. Landfare

HOLYOKE, Mass.—An acute coronary thrombosis has claimed the life of Warren J. Landfare, 77, actively engaged in the paper industry throughout his lifetime and one-time superintendent of the Albion Division of the American Writing Paper Company, for many years.

Mr. Landfare entered the paper making business when a boy of 12, and remained in the paper industry most of his life.

His survivors are one daughter, Mrs. Felix Goldstub of Northampton; one son, Kenneth W. Landfare of Ridge Park, N. J., a granddaughter and a great-granddaughter.

"Let's make the Shoe fit!"



Just as the blacksmith skilfully forges and fits each shoe to give a firm, comfortable footing, National develops starch specialties to fit the specific needs of the paper industry.

An excellent example is the development by National of NADEX #344 — an amazingly efficient specialty binder for high speed machine coating.

Experience has shown that the use of ordinary starch products and binders in the formulation of coating colors makes them either too heavy to give low yield points and satisfactory machining characteristics; or too thin to give adequate coating strength.

NADEX #344 is exactly fitted to the requirements of high speed machine coating with good stability. It cooks thin and produces high solids coating colors with . . . low yield points . . . excellent machining properties . . . adequate strength in the coating.

NADEX #344 is but one of a series of specialty starch derivatives and modifications that have been developed by National — a basic refiner and processor of all types of starch — to fit the specific needs of the paper industry for beater, tub and calender sizes and coating work.

National
STARCH PRODUCTS

Offices: 270 Madison Avenue, New York 16; Boston, Philadelphia, Atlanta, New Orleans, Indianapolis, Chicago, San Francisco and other principal cities. In Canada: Meredith, Simmons & Co., Ltd.; Toronto and Montreal. In Holland: Nationale Zetmeelindustrie, N. V., Veendam.

STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

TRENDS

(Continued from page 22)

of 1947. New orders dipped 6.02 percent behind the same week of 1947, while unfilled orders declined 28.11 percent for the same week.

Production of container board increased 32 percent, and miscellaneous boards 22 percent in the first two months of the year, compared with the same months of last year, whereas moderate to substantial declines are apparent for liners, folding boxboard and cardboard. Wet machine board gained 4 percent and building boards 19 percent, according to statistics of the National Paperboard Association.

Cottons

The quiet conditions prevalent in this market for some weeks is undisturbed. Limited quantities of new cottons are available at firm prices. Mills are still drawing on inventories which, because of the market surfeit of rag-content, had become top-heavy. And with production cut back to meet the present softened market, buyers are still able to wait for lower-priced cottons so that they may compete with the sulphite field, which at present is in good supply of most grades of bonds and ledgers.

Index

The index of general business activity for the week ended April 17 inclined to 143.6 from 142.6 in the preceding week, compared with 144.2 for the corresponding week of 1947. Index of paperboard production was 183.5 percent, compared with 192.0 in the preceding week, and with 174.7 in the corresponding week of 1947.

Paper production for the week ended April 17 was estimated at 100.4 percent, compared with 102.0 for the preceding week, with 105.9 for the corresponding week of 1947, with 102.5 for 1946, and with 90.7 for the corresponding week of 1945. (This does not include mills producing newsprint exclusively.) Tonnage production was 7.4 percent greater than last year's, although because of a 13.3 percent increase in 1948 capacity, this year's production ratio is lower.

Paperboard production for the week ended April 17 was 100.0 percent of capacity, compared with 103.0 for the preceding week, with 102.0 for the corresponding week of 1947, with 101.0 for 1946, and with 98.0 for the corresponding week of 1945.

Roosevelt Starts New Winder

PHILADELPHIA—The Roosevelt Company has installed a new 84 inch wide Cameron Rewinder. This machine is now running at 1,500 feet per minute and can rewind small to 50 inches maximum diameter rolls. Plant capacity is now 75 tons daily.

JOSEPH P. HENNEBERRY

recently named manager of the combined envelope adhesive and dextrine sales department of Paisley Products, Inc. In addition, he will handle the technical sales and service requirements of tapioca and potato dextrine specialties for the flat gumming trades. Joe Henneberry has been actively associated with Paisley's envelope adhesive sales department for more than ten years and brings to his new position a background of wide experience in all phases of envelope adhesive and dextrine application techniques. His headquarters will be at the Paisley Chicago plant.

Stein, Hall Celebrates 50 Years in Philadelphia

PHILADELPHIA — The local office of Stein, Hall & Company, Inc., will be fifty years old on May 4th of this year. Under the management of Elliott I. Stokes during the past 10 years, this office has steadily grown in size, and services today a large number of industrial enterprises located in Pennsylvania, Maryland, Delaware, New Jersey, West Virginia and Washington, D. C.

The Philadelphia office was the first of the nation-wide network of branch offices established in the 82 years of Stein, Hall & Company's history. It was originally headed by Harry M. Saffer; Mr. Stokes assumed his position as head of the office upon the death of Mr. Saffer in 1938. Mr. Stokes joined the Boston office of the Stein-Hall organization in 1911 and was transferred to the Philadelphia branch in 1919 after service in the first World War. Today he directs the activities of a staff of nine, including five salesmen.

Vermont Trucks Move As Strike is Settled

MONTPELIER, Vt.—Hard-hit by the prolonged truck drivers strike throughout the state, paper manufacturers have been informed that the truck drivers' strike which has tied up motor transportation throughout Vermont since March 1, has been settled and the big vans and trailer trucks are ready to roll over the highways again.

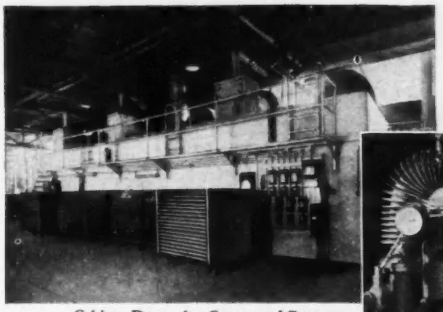
A committee representing the struck trucking companies and the negotiating committee for Local 597, International Brotherhood of Teamsters, AFL, reached agreement on a master contract to cover drivers and helpers in the state. The agreement was reached at a meeting in Bellows Falls. Copies of the contract have been signed by union representatives and officials of the individual trucking companies, but operations were resumed immediately on the basis of the general agreement.

York Haven Mill Installs Second Jones Beater

YORK HAVEN, Pa. — The International Paper Company, Southern Kraft Division, has just installed its second 2000 pound capacity Jones - Bertrams patent beater. The first unit has been in operation about six months. Both beaters are identical and have the latest design features, such as fabricated stainless steel tubs and an extremely rugged bandless roll construction. Foxboro Controls provide full automatic control of roll pressure on the stock. The rolls are driven by 250 HP motors and Link-Belt chain drives.

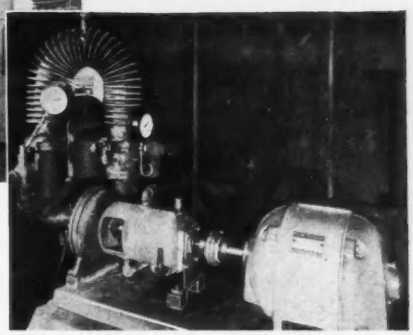
This mill has also just installed its fourth Jones High-Speed Refiner. It is equipped with a special design stainless steel filling combination and is direct connected to a 75 HP motor.

Drying Rolls of the 78-in. Paper Machine



Cabinet Dryers for Corrugated Papers

"Our Cochrane C-B System repaid its cost in less than a year", *says Norristown Magnesia and Asbestos Co.*



This is the Cochrane C-B unit used with the steam system at Norristown Magnesia and Asbestos Company.

An Industrial "Must"

WHEN engineering skill and manufacturing "know how" team up to provide an industrial "must"—you can't afford to be without it. That's the story of Cochrane C-B . . . the "closed circuit" system of steam condensate return.

Whenever steam flashes off in returning to the boiler, heat units wash down the drain. *They're wasted!* That means more fuel needed to replace them . . . it means lower temperatures in the steam system . . . it means increased makeup treatment cost . . . That's why we say Cochrane C-B is "an industrial must".

It's a "closed circuit" high pressure condensate return system. There's no flashing of steam. Condensate is pumped back to the boiler at the highest possible temperatures. Positive removal of condensate and insulating entrained air is insured. Uniform temperatures boost production and save fuel.

F. T. Cleveland of the Norristown Magnesia and Asbestos Company, Norristown, Pa. says, "This system has repaid its cost several times over during the past year in production increases. It affords better quality of paper because of high and uniform heat transfer rates and there are definite fuel savings from the return of condensate at higher temperatures".

Cochrane C-B is installed on almost 100 corrugators throughout the country. Write today for detailed information.

COCHRANE CORPORATION
3103 N. 17th Street, Philadelphia 32, Pa.

COCHRANE CONDENSATE C-B BOOSTER SYSTEM
OF HIGH PRESSURE, HIGH TEMPERATURE CONDENSATE RETURN

DIGESTED

More than $83,683,000 will have been invested since the war in new plants and equipment in Pennsylvania by 85 paper and printing industries as reported in an industrial survey made public this week by Governor James H. Duff and Secretary of Commerce Orus J. Matthews. This is part of an expansion of more than two billion dollars reported by 1,086 companies which had participated in an industrial survey conducted by the Department of Commerce of the Commonwealth of Pennsylvania. The new facilities created hundreds of thousands of jobs. The survey contained figures on construction for 1946 and 1947, and estimates for 1948.

With paper manufacturers reporting expenditures of $32,226,533, the printing industries reported the largest three-year total for capital expenditures, this being in the amount of $39,171,354. Paper products companies accounted for $12,285,168; total of $83,683,055.

"Two of the six areas in the United States in which the greatest expansion of manufacturing facilities occurred during the war were predominantly in Pennsylvania. These were the Philadelphia-Camden area, and the Pittsburgh area. In the latter alone, it has been estimated that more money was spent on new manufacturing facilities than in any one of 36 entire States."

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
March 13	100.9	March 15	107.2
March 20	101.2	March 22	105.8
March 27	98.2	March 29	107.3
April 3	100.0	April 5	106.1
April 10	102.4	April 12	100.7
April 17	*100.4*	April 19	105.9

COMPARATIVE MONTHLY SUMMARIES

1947	*	May	106.2	Oct.	109.5	1948	
Jan.	102.1	June	106.0	Nov.	109.3	Jan.	100.9
Feb.	105.9	July	93.5	Dec.	101.5	Feb.	100.3
Mar.	106.1	Aug.	104.2			Mar.	*100.6*
Apr.	105.1	Sept.	102.0	Year Avg.	104.3		

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	90.4	102.9	88.8	88.1	88.4	99.7	104.9	*100.5*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTE: *As of January 10 capacity base increased by 13.3%.*

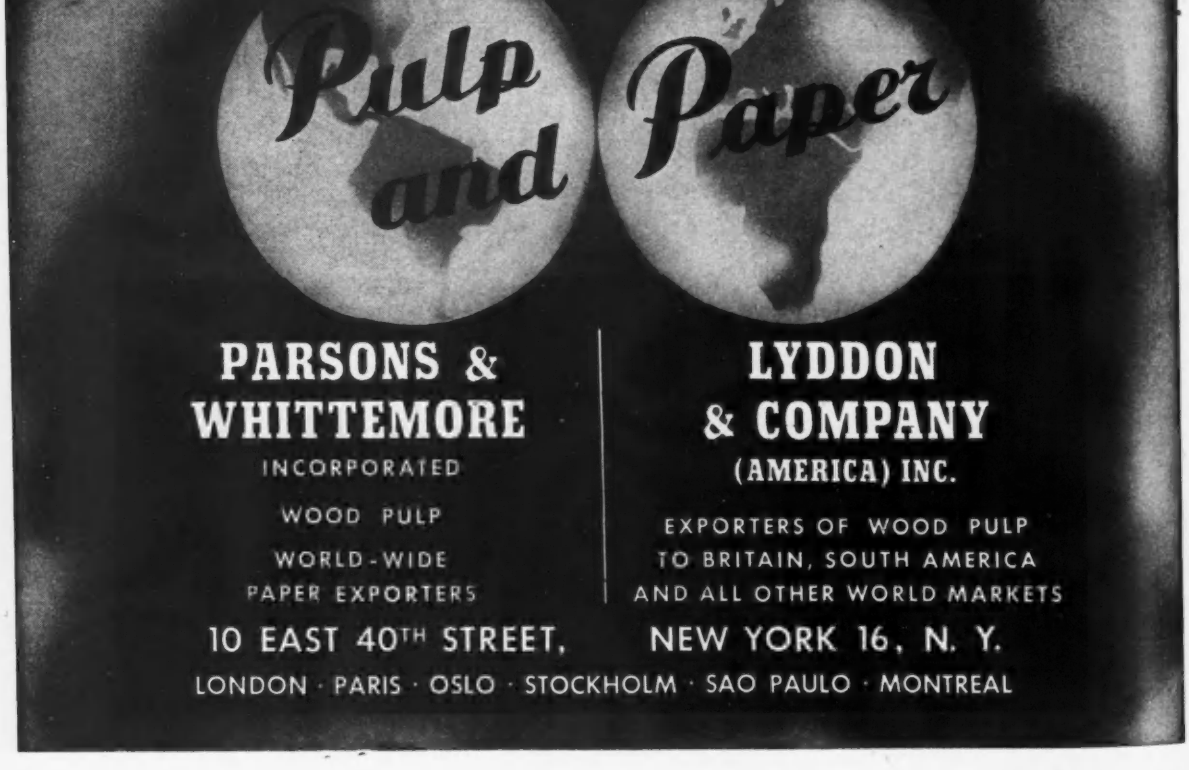
PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
March 13	102	March 15	104
March 20	104	March 22	103
March 27	104	March 29	102
April 3	98	April 5	102
April 10	103	April 12	96
April 17	*100*	April 19	102

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	*102*										

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



EDITORIAL

Clearer Air

What, with admirable accuracy, the Forest Products Section of the Office of Domestic Commerce described this week as the rapid pace of events during March and April created was not only some renewed confusion. It gave rise to uncertainty limited only by the imagination of some who let their thoughts dwell too long on the various rumors and whispers that always follow in the train of adventures into the unknown. The Section, in its report for April not only recognizes these factors, but by marshalling such facts as are at hand has added to its customary report of records made during the period covered a series of plain statements designed to exert a palliative effect.

In general, as concerns the immediate experience of the industry, the Section finds that while conditions may vary somewhat between different sections of the country in terms of either relative shortages or relative free supply of various grades and items, the general consensus appears to be that throughout the first part of April, at least, the market continued to grow easier for many grades and items and customers' demands less persistent. Mill inventories still are practically nonexistent—it is declared, and order files are synchronized with production schedules and allocations made to customers.

Some of the principal items credited with causing concern have been: Rumors of plans for an economic union with Canada; newspaper reports of German Bi-Zone pulp and paper import requirements of $67.9 million; questions as to current activities of the National Security Resources Board and the Committees on Industrial Mobilization of the Munitions Board; and general apprehension about possible new Government controls. Besides these, the Section finds, the tax reduction legislation in face of increased expenditures for National Defense and ERP is apparently making it more difficult for executives to measure the near future supply-demand situation when only slightly more goods will be available than in recent months but perhaps much greater demand.

To these details, the Department gives answer.

There are, it says, no current U. S. Government activities toward a basic economic union with Canada in the complete and true sense of an arrangement whereby tariffs and other import-export regulations would be abolished. There have been continued informal United States-Canadian discussions over the past many months on the broad aspects of the present economic situation with respect to the European Recovery Program, Canadian dollar exchange, recent Canadian import restrictions and other similar current problems

Newspaper reports of German Bi-Zone import requirements for pulp and paper amounting to $67.9 million are declared to be several times too high. Actually, import needs for 1948 are estimated to be approximately the same as in 1947 and none is scheduled to come from the United States. The normal sources of supply, namely, European producing countries, are expected to meet these needs. The same is true of pulp and paper requirements of other ERP countries, since no demands are expected to arise for supplies from the United States other than approximately the same relatively small quantities that have been shipped in 1946 or 1947 to meet normal commercial relationships. United States exports of pulp, paper, paperboard, and converted products to Europe are not on the positive list so that quotas have not been established and export licenses, in most cases, are promptly approved. Export licenses are required only for destinations included in country Group R as set forth in Current Export Bulletin No. 434 of the Office of International Trade.

As of the first part of April, the National Security Resources Board was setting up a Timber & Forest Products Division and recruiting personnel.

Under the Munitions Board, Department of National Defense, a Forest Products Committee was established in October 1947 as one of the Committees on Industrial Mobilization. To date, the Forest Products Committee has been preparing a preliminary report on lumber and timber products; no similar report is underway with respect to pulp and paper in particular, although one will be prepared in the near future.

Except for the export controls referred to and the established import duties on paper (except newsprint), paperboard, and converted products, the pulp and paper industry is not subject at present to any Federal Government regulation on production, distribution, or prices. Export controls are administered by the Office of International Trade (OIT) of the Department of Commerce. Such remaining Federal domestic controls on a few products other than pulp or paper (such as tin, antimony, and rubber) are administered by the Office of Materials Distribution (OMD) of the Department of Commerce.

Recent legislation prescribed by Public Law 395 allows for voluntary industry cooperation "providing for priority allocation and inventory control of scarce commodities which basically affect the cost of living or industrial production." Such voluntary industry agreements are administered by the Office of Industry Cooperation (OIC) of the Department of Commerce. So far there has been no reason for such arrangements for the pulp, paper, paperboard, or major products industries.

W. L. Cook

Editor

If it's power piping equipment it's in the CRANE line

Valves, fittings, piping accessories, and fabricated pipe—the Crane line includes them all! In steel, iron, brass, or alloy materials, Crane gives you the most comprehensive selection in all types of equipment for power, process, or general utility piping.

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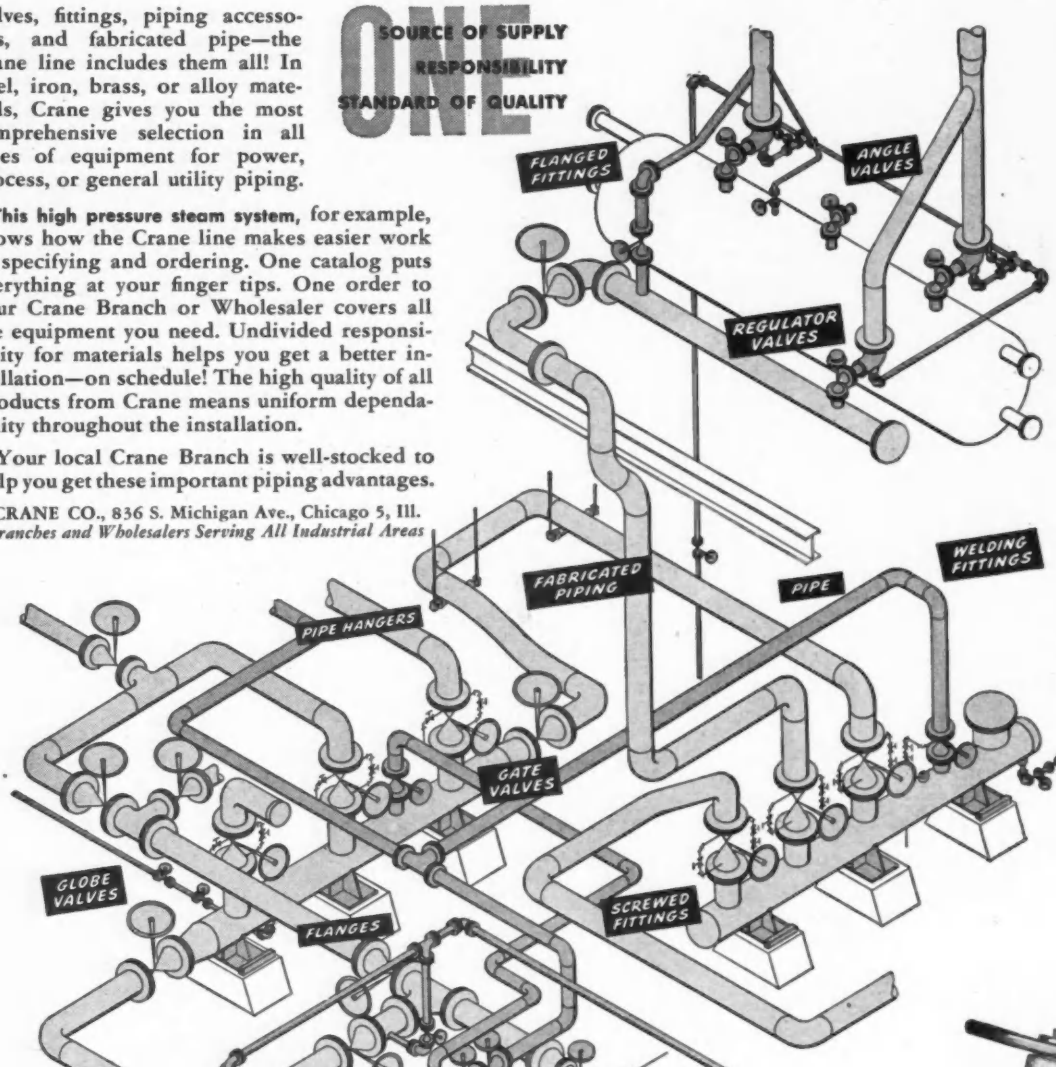

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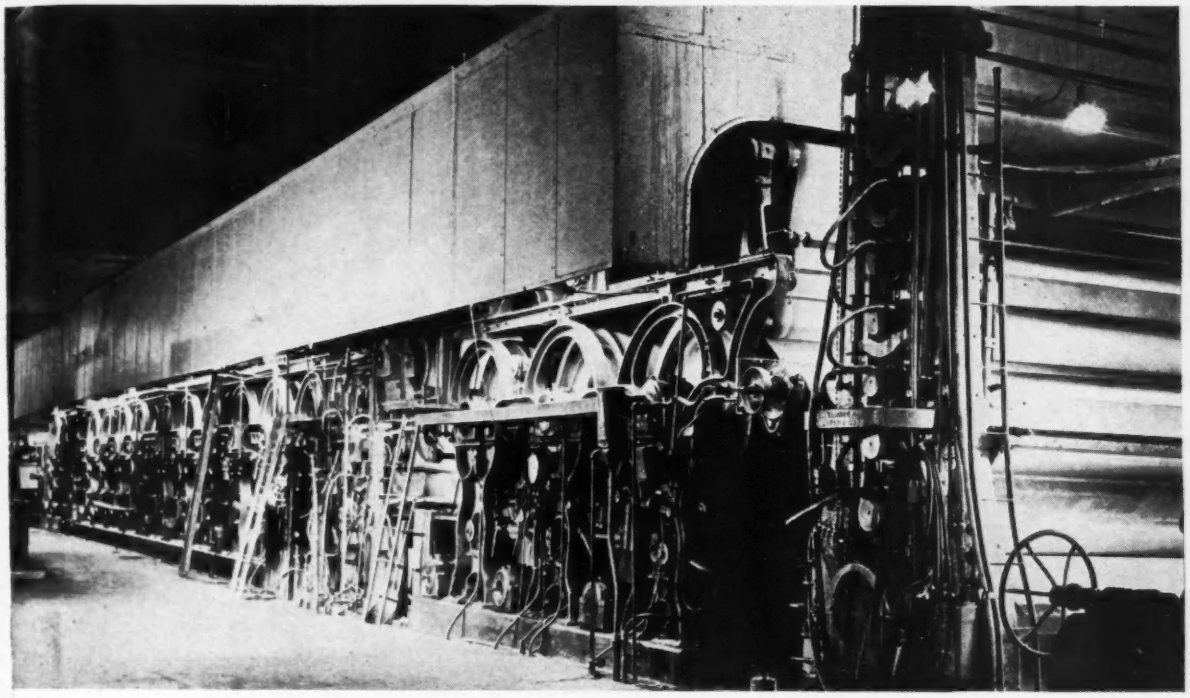


Fraser's newly rebuilt No. 1 paper machine, from the dry end

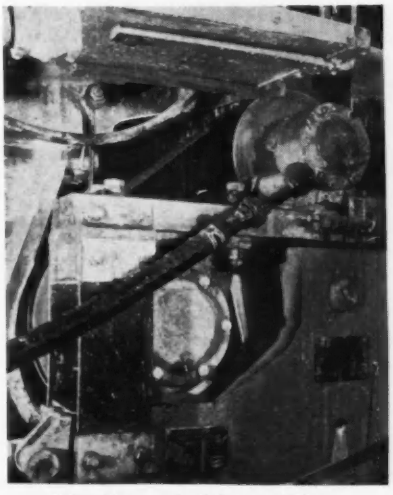
Fraser Rebuilds No. 1 Machine To Withstand Corrosion

MADAWASKA, Maine—With the resumption of production on its number 1 machine in the Bond mill, Fraser Paper, Limited, in January marked another step in its program of expanding production through improvement of existing facilities. Number 1 machine, supplied with new fourdrinier parts by Rice Barton Corporation, is now almost completely resistant to such troubles as cause interruptions to production. This has been accomplished through liberal use of nickel alloys.

The present program centers around the Bond mill at Madawaska as distinguished from the Catalog mill, which is really a separate unit. Pulp for both of these paper mills at Madawaska is pumped across the international border by a pipe line system from the Sulphite and Groundwood Pulp mills of Fraser Companies, Limited at Edmundston, New Brunswick. Large pipe lines, each about a mile long, carry daily upwards of 400 tons of pulp from the pulp mills to the paper mills. This is pumped at a consistency of about one percent and the operation involves moving over nine million gallons of water each day.

In its rebuilding plan number 1 machine follows closely the specifications that were used in 1941 on its companion, number 2. Both of these machines were built originally in 1925 by Pusey & Jones Corporation.

The outstanding feature of both of these Fourdriniers is their protection against corrosion. The frames are made of Ni-resist, a nickel cast iron alloy. The rails on these Fourdriniers are made of steel but are completely covered with sheet Monel. These parts on number 2 machine have been in operation since 1941 without a trace of corrosion, although the Monel-covered parts were never painted and the Ni-resist parts were painted at the time of installation but have never been repainted. In addition to corrosion resistant rails and frames, number 1 machine also has its flat suction boxes mounted on springs of Z nickel which allows continuous oscillation. Z nickel is also used for shake springs on Fourdrinier parts and on Bird Screens. This alloy is composed of nickel to which a small percentage of aluminum has been added to make it heat-treatable. It is not only completely noncorrosive but has fatigue resistance several times that of regular spring steel and considerably greater than that of Beryllium copper. The springs are fabricated by Rice Barton Company of Z nickel alloy.

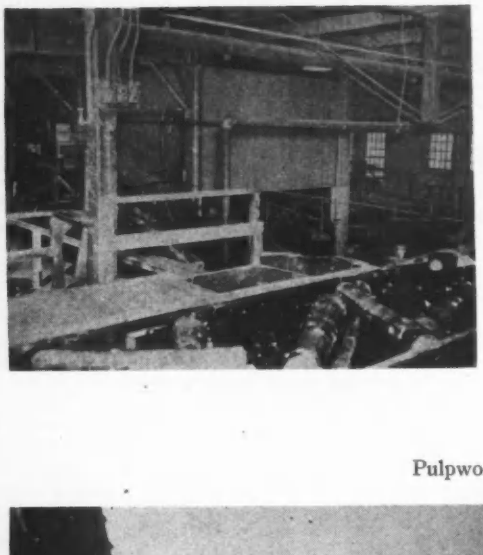


Rice Barton dual breast roll on No. 1 machine

Number 1 machine also has a Rice Barton dual breast roll which consists of a small roll in the place usually occupied by the breast roll and a larger auxiliary roll below and back under the head box. This latter roll takes most of the stress of keeping the wire taut, thus reducing tension on the smaller breast roll and permitting it to run more freely. This arrangement also allows the first table roll to be placed much closer to the breast roll, practically eliminating wire sag at this

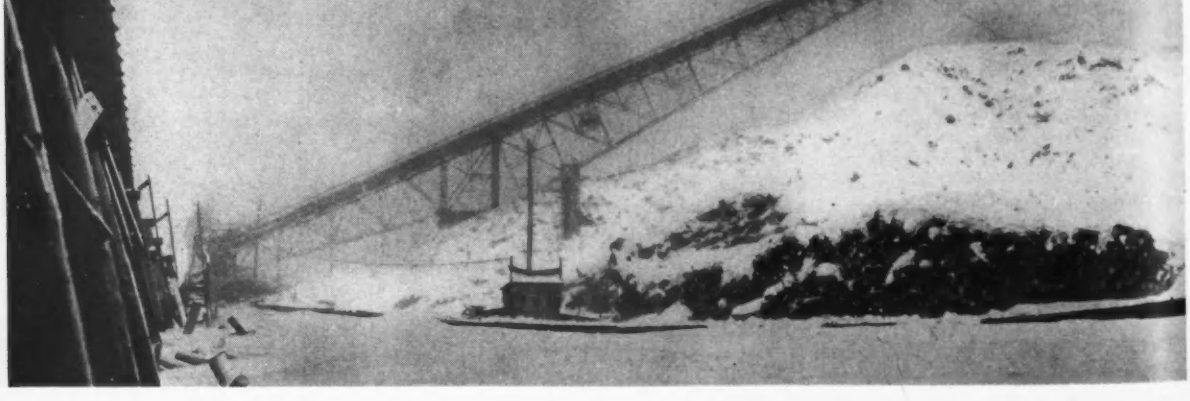
Fraser Pumps Its Pulp from Canada

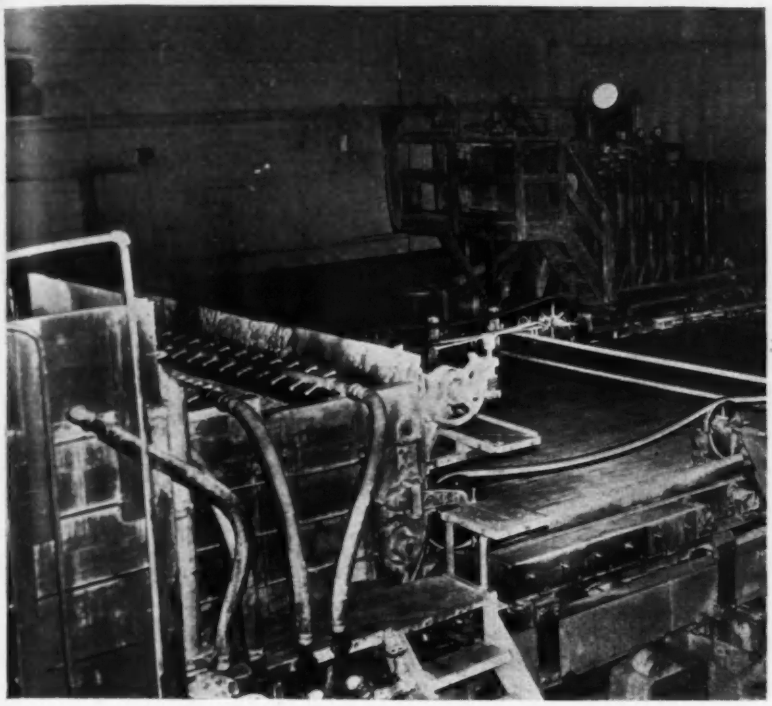
Across the International Bridge over the St. John River the pipelines on the side of the bridge carry about 400 tons of pulp daily to the Madawaska mill. The picture was taken from Edmunston, N. B., and shows Madawaska, Maine, in the background.



Left—In the wood room at Edmunston, N. B., the logs are washed and conveyed through to the digesters to be made ready, as pulp, for their trip through the pipeline across the International Bridge.

Pulpwood storage yard and conveyor.





Head box and part of No. 1 machine's Fourdrinier

point and making the use of a forming board unnecessary. Another advantage of the new roll is that it is equipped with micrometer adjusting units which allow the roll to be moved vertically or horizontally while in operation. When changing a wire, the whole Fourdrinier is moved toward the couch and then rolled into the aisle. The wire is then replaced without changing any of the adjustments on the breast roll.

Paper machines 1 and 2 are identical in size; both have wires 168 inches wide and 80 feet 1 inch long. No. 2 machine is equipped with a size press. Paper machine number 3 has a Fourdrinier wire 202 inches wide and 70 feet long. This machine is also equipped with a size press. Paper machine number 4 has a wire 190 inches wide and 70 feet long.

These machines manufacture Waxing raw stock, Sulphite Bonds and Specialties.

There are two beater rooms in the Bond mill, one serving 1 and 2 machines and the other serving machines 3 and 4. Each beater room has eight 1,200 lb. Dayton beaters which are usually divided evenly, that is, four to serve each machine. However, they are so arranged that it is possible to use five on one machine and three on the other.

The stock as it comes from the Edmundston Mill has a consistency of only one percent and consequently must be thickened before being used in the beaters. Three large Oliver vacuum thickeners are used for this purpose. All of these Olivers are equipped with Monel wires. These Olivers are so connected that the stock from any unit may be used in any of the beaters.

Each paper machine in the Bond mill is equipped with two Jordans, some of which have stainless steel bars. The Jordans were built by E. D. Jones Company. Each paper machine is also equipped with three Bird Screens.

Catalog Mill

The Catalog mill is located across the street from the Bond mill and is connected to it by an underground tunnel. This mill has two paper machines each with wires 226 inches wide by 80 feet long. These machines were built by Pusey & Jones Co. in 1929 and were designed expressly for the production of Catalog and Telephone Directory paper. They are not equipped with size presses. The beater room for these two machines contains four Oliver vacuum thickeners, five Dilts beaters and two Jordans. Since these machines usually run on the same grade of paper, much of the equipment may be used interchangeably.

Each of these paper machines is equipped with three Bird Screens and each one also has a Meyers Consistency regulator.

General

A modern laboratory provides facilities for all control, testing, inspection and development work.

The mill at Madawaska has a large modern power plant with five powdered fuel boilers which use over 350 tons of coal per day. There are three turbine generators operating at 260 PSI pressure. The largest and newest of these is rated at 7,500 KVA. The others are rated at 4,375 and 3,125 respectively.

The mill has its own Medical Department with complete surgical equipment as well as X-rays and heat therapy equipment. A lunch room is now being equipped for the use of employes. This room will also be used for showing movies, both educational and recreational, and as classrooms for vocational training courses.

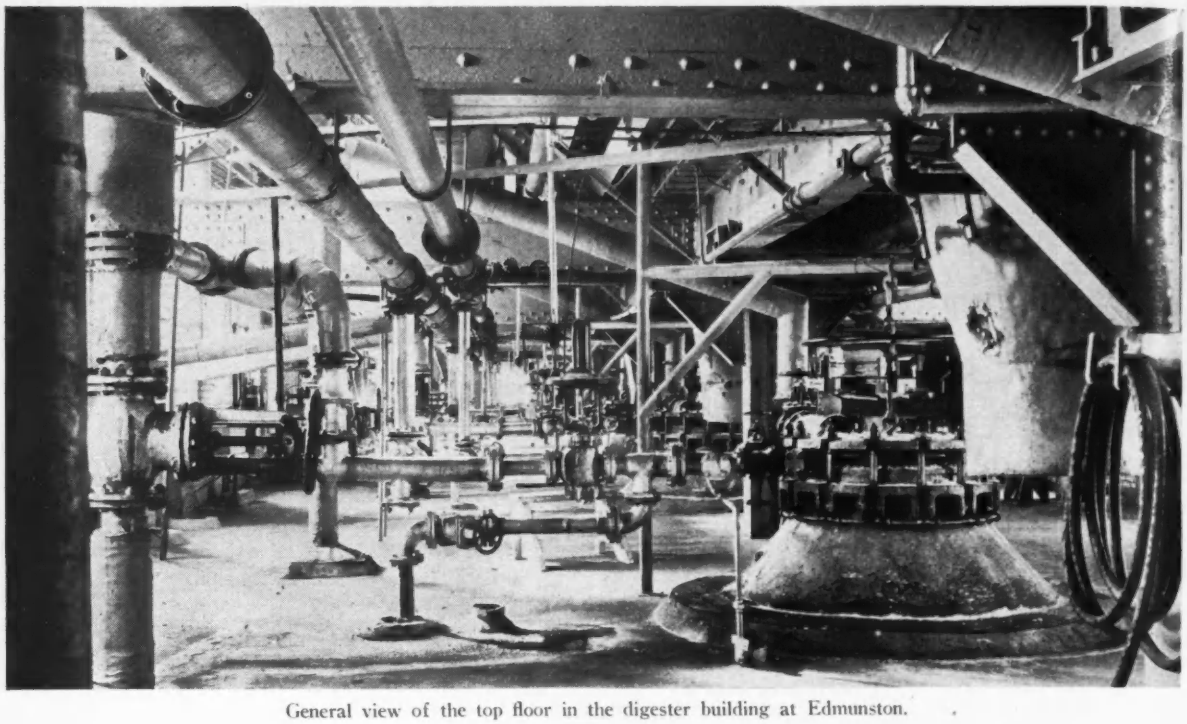
T. M. Barry
Madawaska mill manager

Company History

In 1917 Fraser Companies, Limited, was incorporated to take over the sev-

INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

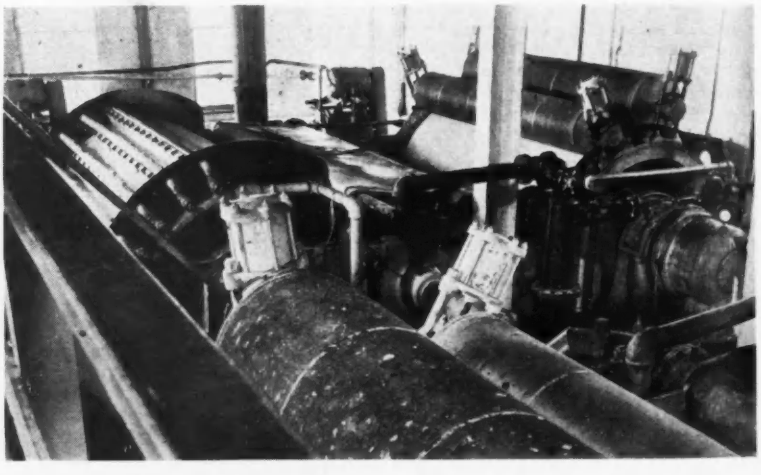


General view of the top floor in the digester building at Edmunston.

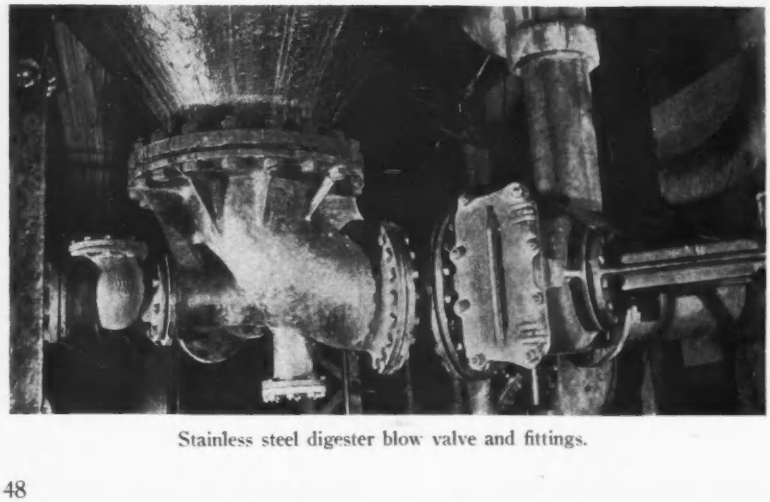
eral lumber companies owned by Archibald Fraser, Donald Fraser, William Matheson, Thomas Matheson and Andrew Brebner. These had had their beginnings in 1877 in a small lumber business founded by Donald Fraser Sr.

The first business of the new company was to construct a Sulphite Pulp Mill at Edmundston, N.B. This mill started operation in 1918. The Sulphite Mill of the Dominion Pulp Company at Chatham, N.B., was purchased in 1920 and operated until 1932 when it was permanently shut down.

In 1925 Fraser Paper, Limited, a subsidiary corporation, formed to build and operate a paper mill at Madawaska, Maine, just across the St. John River from Edmundston. The Sulphite pulp from the Edmundston mill was pumped to the paper mill through a pipe line across the International Bridge.



Acid vacuum washers in the bleach plant at Edmunston.

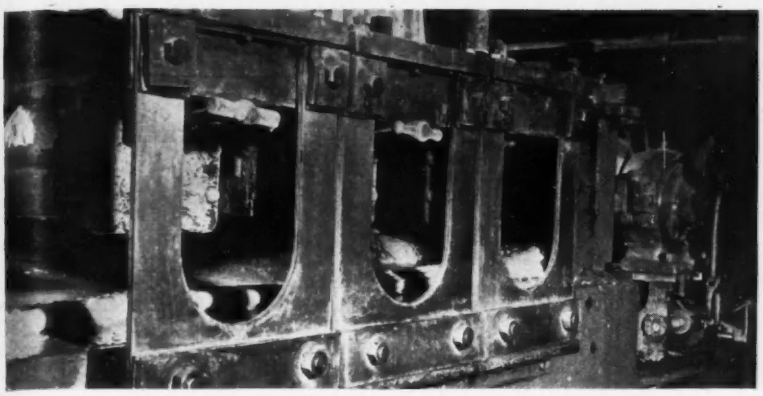


Stainless steel digester blow valve and fittings.

In 1928 a groundwood mill was added to the Edmundston Plant and an additional pipeline provided to convey the groundwood pulp across the river to Madawaska. During this same year a pulp dryer at Edmundston was converted to a six cylinder board machine, trimming 120 inches.

In 1929 construction was started on a bleached Sulphite mill at Atholville, N.B., by the Restigouche Company, Limited, another subsidiary which had been acquired in 1924 as the Stetson Cutler and Company Limited. This mill was put into operation in 1930.

Meanwhile, the paper mill at Madawaska had been enlarged from the original two paper machines in 1926 to a total of six Fourdriniers in 1930. The production had been increased



Z-Nickel suction box springs on No. 1 paper machine.

from 100 to nearly 400 tons per day.

The main office of Fraser Companies, Limited and subsidiaries is located at Edmundston and the executive staff which is located there includes: Mr. Aubrey Crabtree, President and General Manager; Mr. L. M. Sherwood, Vice-President and Controller; Mr. H. H. Henderson, Treas.; Mr. G. G. Gillies, Secretary. The pulp mill at Edmundston produces 350 tons of Sulphite pulp, of which about 80 percent is bleached, 115 tons of Groundwood and 75 tons of paperboard daily.

Woodlands

Fraser Companies, Limited and Restigouche Company, Limited now have about 3.5 million acres of forest land of which about one million acres are owned outright and the other 2.5 million acres held under license from the Provinces of New Brunswick and Quebec. The forests are operated on a sustained yield basis and provide a large percentage of the wood for the annual requirements of the pulp mills, production of 25 million board feet of lumber and the 40,000 tons of Sulphate pulp which will be produced yearly at the mill now being built at Newcastle, N.B.

Wood Handling

Although some peeled wood is used at the Edmundston pulp mill, the majority is rough wood. The latter is barked during the summer season utilizing the six Thorne Barkers which are equipped to handle four foot wood. After barking the wood is piled in three large storage piles. As required, wood is cut into two foot lengths for the Groundwood Mill and the chips for the Sulphite Mill are produced by chippers, the largest of which is an 84 inch ten knife chipper.

Groundwood Mill

The groundwood mill produces 115 tons of pulp per day from 20 three-pocket grinders, which are arranged in five lines of four grinders to a line. Each line is driven by a 2,400 H.P. synchronous motor operating at 240 R.P.M. The pulp is screened through three rotaries and four lines of flat screens. Most of the groundwood pulp is pumped to the Madawaska mill but some of it is used in the Edmundston Board Mill. The amount used in each place, of course, depends on the grades being made on each particular machine.

Left—A badly rusted steel angle iron brace on No. 2 paper machine is contrasted against the complete absence of corrosion on the Ni-resist frame which has been in operation over 7 years without repainting.

Sulphite Mill

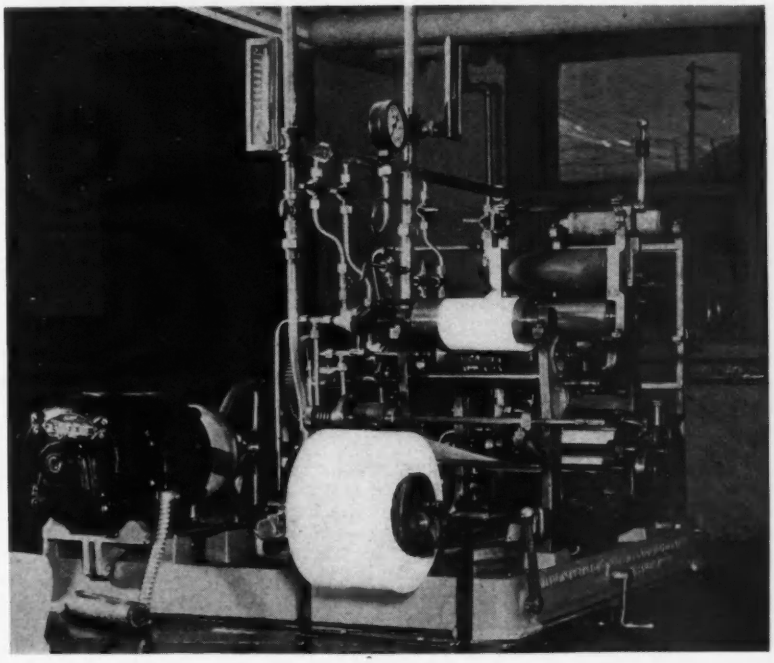
The acid plant includes a modern spray type burner built by Chemical Construction Company and a waste heat boiler built by Foster Wheeler. This boiler produces about 12,000 lbs. of steam per hour. The system also includes conventional gas coolers and Jenssen acid tower. A sphere accumulator 34 feet in diameter is used to recover the relief gases.

The Sulphite mill contains eight digesters, each 56 feet high and 17 feet in diameter. The digesters are equipped with Foxboro and Bailey Meter automatic cooking controls which give positive and accurate control of conditions for the entire period of the ten hour cook.

All of the digester blow valves are stainless steel and the pipes which carry the stock to the blow tanks are being changed to the same material as fast as the present cast iron lines need replacement.

The pulp is screened in eight flat screen knotters followed by 15 lines of flat screens. The pulp is then divided, 20 percent being used as unbleached and the other 80 percent going to the bleaching system which consists of a continuous chlorinating

Below—The new laboratory coater made by Mayer Coating Machine Company.



tower followed by an acid washing system. This acid washing system is made up of two parallel lines each containing an Oliver vacuum washer, followed by an Oliver vacuum thickener. Both the washers and thickeners are covered with stainless steel wire. The stock flows to a pair of parallel high density continuous bleachers and then over another Oliver washer fitted with a Monel wire. The final stages of bleaching are done in ten Bellmers.

The power plant is equipped with two pulverized fuel boilers, each rated at 100,000 lbs./hr. and operating at 600 P.S.I. There are also four boilers which are used for burning bark and other mill waste. Each of these is rated at 20,000 lbs./hour.

There is one 1,000 KW and one 3,750 KW turbo-generator. There are also two 1,000 KW hydro-electric generators.

The 3,750 KW turbo-generator is the newest of the group and will soon be supplemented by another of 3,000 KW capacity.

Fraser Progress

Since its entry into the Pulp and Paper industry in 1925 Fraser Companies, Limited and subsidiaries have made considerable progress and expanded and improved its position in the industry. Plants are maintained on a modern and efficient basis.

A well-organized Technical Department keeps under constant observation and control the products in all of their processes.

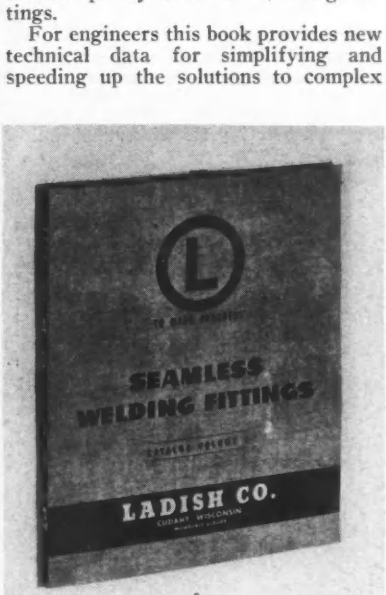
Sales Offices for products manufactured by Fraser Companies, Limited and subsidiary are located in Canada: Edmundston, N.B., for lumber, shingles and railway ties; Montreal, Quebec, for woodpulp and paperboard; Toronto, Ontario, for paperboard. In addition there is an agency at London, England, Fraser Industries (London) Limited for woodpulp and paperboard. Sales Offices for products manufactured by Fraser Paper, Limited are located in New York City and Chicago, U.S.A.

NEW LITERATURE

Ladish Distributes an Engineering Data Book

Ready for immediate distribution, a new 112-page catalog and engineering handbook, published by the Ladish Company, of Cudahy, Wisconsin, has been designed to place in the hands of engineers, specification writers and purchasing agents the detailed ordering information and technical data each needs most in buying, specifying or installing the new Ladish line of controlled quality seamless welding fittings.

For engineers this book provides new technical data for simplifying and speeding up the solutions to complex



piping system design and operating problems. New friction loss tables give direct readings for all common pipe sizes, velocities and gallonages per minute, eliminating all tedious computations from formulae or graphs. In the 30-page engineering section are included new tables of pressure-temperature ratings for all sizes, weights and schedule numbers of pipe at temperatures commonly encountered in power, oil, gas, air and refrigeration piping. Comprehensive tables also provide data on physical characteristics of pipe for calculating design factors related to stress, heat loss, insulation and anchorage. Applicable provisions of all codes and standards are shown to further assist engineers.

For buyers and specifiers this new catalog contains in convenient, well-indexed form the detailed information on types, sizes, weights, dimensions, specifications and prices needed to make quick and easy selections of proper fittings for any piping application. Much valuable data is also included on unique methods of Ladish quality control as well as such significant new product developments as Ladish tapered tee design, Ladish seamless reducing elbow and the wide range of stainless steel and other alloys in which Ladish seamless welding fittings are available for special service applications.

The catalog is said to be colorfully and profusely illustrated and features a novel binding which permits the catalog to be opened flat for easy reference. All tables are specially arranged for readability and quick finding of information desired. Complete visual and numerical indexes are provided in addition to index tabs to speed reference to any type of fitting.

Mount Hope Releases Bulletin on Paper Handling

A new bulletin on the elimination of greases, wrinkles, and distortion of paper has just been issued by Mount Hope Machinery Company, 42 Adams Street, Taunton, Mass., as descriptive literature on the Mount Hope "Free-Wheeling" Expander, recently introduced successfully to the paper industry.

The device consists essentially of a Neoprene sleeve ball bearing mounted on a stationary bowed axle. Since the sleeve is "free-wheeling," maximum widthwise stretching or smoothing-out action is obtained with minimum lengthwise tension and minimum wear on the Neoprene covering. It is claimed by the manufacturer that the patented "Free-Wheeling" Expander when suitably applied enables paper manufacturers either to stretch paper to maximum width, or simply to eliminate creases, wrinkles, distortion and baggy edges during the manufacturing process.

Details of construction, instructions for using, various types available, estimated life of unit, and a complete price list are included. Blueprints and applications are shown.

Copies of the Bulletin (EP) are available on request.

AMA Officers Review Current Management Problems

The American Management Association has published a review of current policies, practices and problems in seven fields of business and industrial management: production, distribution, finance and economic planning, labor relations and personnel administration, office management and administration, insurance, and packaging and merchandising. Titled "Modern Management Practices and Problems," the 25,000 word analysis was written by retiring vice-presidents of the Association in charge of AMA divisions devoted to each of the fields covered.

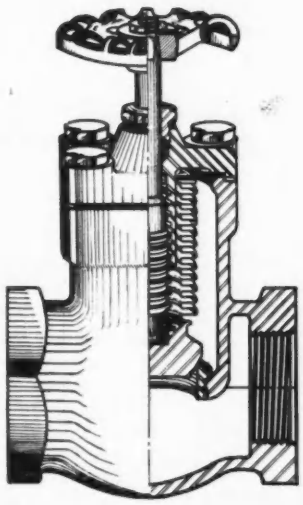
The volume includes "Changing Aspects of the Personnel Function in Management," "Production Problems and Policies," "Office Management and Personnel Trends," and "New Aspects of Distribution." Other chapters are "Financial Policy in Relation to Changing Economic and Social Conditions," "Changes Influencing Insurance Buying," and "Package Development and Merchandising."

The pamphlet is No. 139 of AMA's General Management Series. It may be purchased from the Association at 330 West 42nd Street, New York 18, N. Y., at $1.00 a copy.

EQUIPMENT AND SUPPLIES

Leakproof Packless Valve Eliminates Maintenance

KNOXVILLE, Tenn.—A new type of packless valve which far surpasses the service limitations of conventional valves in pressure or vacuum as well as temperature, and which eliminates the costly maintenance required with stuffing boxes and other means of preventing leakage, is offered by Fulton Sylphon Division of Robertshaw-Fulton Controls Co., Knoxville, Tenn., Dept. P-V.



This new valve, termed the "No. 3000 series," owes its unprecedented leakproof performance and freedom from maintenance to the seamless metal Sylphon Bellows which forms a leakless connection between the valve disc and the valve body. Repeated opening and closing of the valve is permitted by this construction and no maintenance is required to keep the stem absolutely tight against leakage even under extreme conditions of pressure or vacuum.

The stainless steel bellows and bodies with which the valves are equipped adapt them for economical service in applications which would be impractical or impossible with conventional valves affected by corrosives. The bodies of the new valves also are available in bronze, cast iron, cast steel or monel metal. The Sylphon bellows is available in either stainless steel or monel or in a variety of other metals including phosphor bronze and brass.

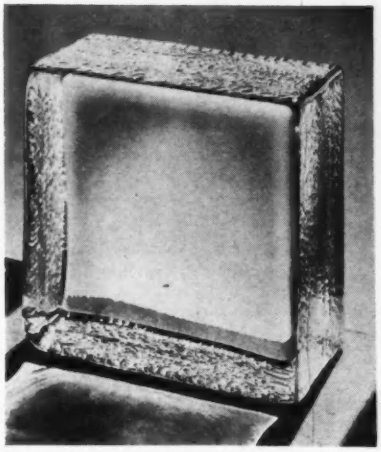
The full significance of the leakproof feature of the new Fulton Sylphon valve is appreciated in the valving of toxic or explosive liquids or gases where leakage might not only seriously affect human comfort but also it might actually endanger life. Significance of the new packless valve is further emphasized by its particular suitability to service under high vacuum.

The valves are made in sizes ¼-inch up to three inches with screwed, welded or flanged ends. In the screwed-end type, the new valves are applicable to temperature services up to 300 degrees Fahr. For service with temperatures above 300 degrees Fahr. and up to 700 degrees Fahr., a yoke and external thread (O.S. and Y.) construction is employed. By special construction these valves may be made suitable for extreme temperatures up to 1200 degrees Fahrenheit.

Pittsburgh's Glass Blocks Make Reappearance

Solid glass blocks, a product of Pittsburgh-Corning Corporation which became a war casualty, have been returned to the market in available sizes 5 inches by 5 inches by 2⅝ inches.

Their compression strength (ultimate) is 80,000 p.s.i. under uniform loading; modulus of elasticity is 10 million p.s.i.; coefficient of expansion (linear) 0.0000047 per degree Fahrenheit; weight, 5.7 pounds each; pattern description, stippled edges, clear faces (one flat and one dished), no bond coating on edges. Come packed eight pieces per carton with shipping weight 45.5 pounds.



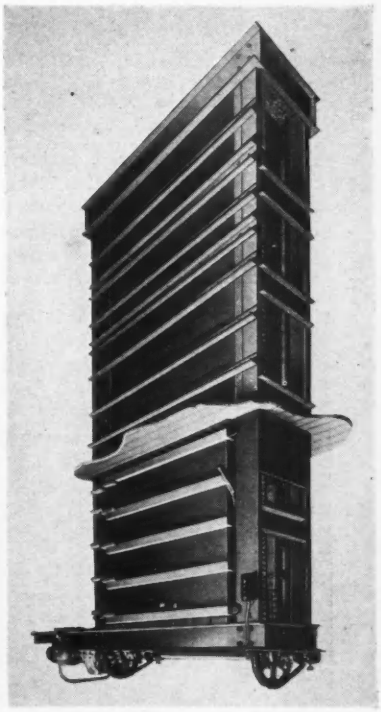
Suggested as lining for stock chests, bleach or chlorinating tanks or wherever tile is now used for lining.

Descriptive circular from Pittsburgh-Corning Corporation, 632 Duquesne Wayne, Pittsburgh 22, Pa.

Loeser Distributes Buffalo Modern Pit Baler

The new upstroke electric pit baler of the Buffalo Baler Company, culmination of the manufacturer's fifty years' experience in building balers, is now being marketed through E. W. Loeser Company, 1352 Genesee Street, Buffalo 11, N. Y. Standard bale heights are 54 inches, 60, 66 and 72 inches.

Buffalo balers are said to be made of heavy steel plates, heavy structural channels and angles, and although of welded construction can easily be dismantled for removal, if necessary. Heavy duty steel roller chains and steel sprockets are used throughout.



Buffalo Pit Baler Series 200

Series 200 is built with a ten-foot chamber beneath the floor. Material to be baled is merely pushed or thrown into the chamber, thus eliminating the necessity of any lifting on the part of the operator. All standard models are constructed with sliding roller top so that filling may be made from an upper floor if desired. The lower platform leaves the finished bale at just the right height for removal to a hand truck.

Electrical equipment is said to be the most modern obtainable, and consists of ball-bearing high-torque motor, magnetic starter and reverser, automatic pressure cut-off switch, three-way push-button station, limit switches top and bottom, and ballbearing reduction unit.

Descriptive circular available from Loesser Company.

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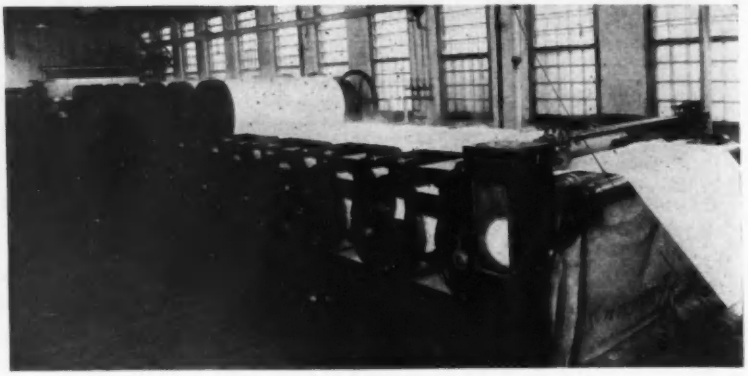

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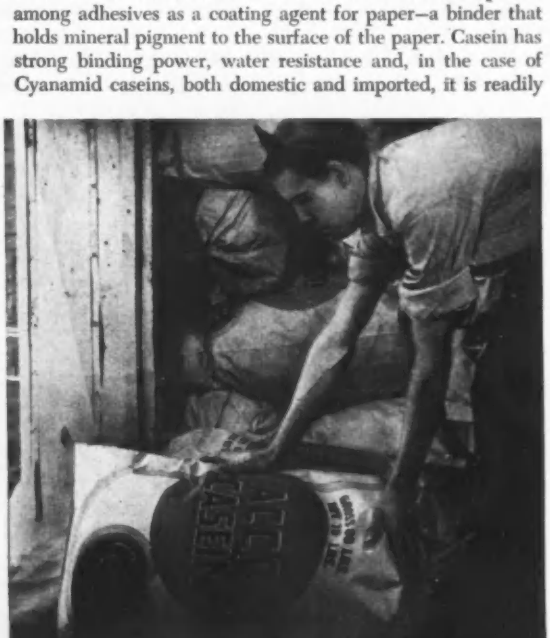

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Absolutely uniform quality, such as is provided in Cyanamid caseins, is essential to the paper-maker. Satisfactory results in the coating of paper demand that he be able to rely implicitly on his casein supplier to give him the exact grade every time.

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†Trade-mark of American Cyanamid Company covering its synthetic resins for use by the paper industry. The processes under which PAREZ is applied in the production of wet-strength paper are covered by U. S. Patents Nos. 2,291,079, 2,291,080 and 2,345,543 and U. S. Patent Application Serial No. 453,032.

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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

The Fundamentals of "Controlled Flow" Beating*

By L. E. Randecker[1]

Abstract

Two "controlled flow" beaters are in operation. The design differences between the "controlled flow" beater and the conventional beater are described.

The potentialities of the roll are analyzed and developed by using the inch cut per minute formula.

By doing this a conclusion is drawn that the roll can have built into it seven times the work ability of a comparative conventional roll. Another conclusion—based upon the analysis of the factors in roll design—is that the efficiency of a beater is greatly influenced by the relation of the amount of fiber carried on the bar edges to that carried in the roll bar cells.

The "controlled flow" design allows this relationship or ratio to be reduced from five to one in a conventional beater to 1⅓ to 1, thereby favorably affecting the horsepower hours per ton required to prepare the fiber.

The "controlled flow" beater design was started in 1945. Today two are in operation, one on rag content papers, the other on sulphite papers.

It is the author's intent to explain the design differences between a "controlled flow" beater and a conventional beater and to show how these differences affect beater efficiency and how they contribute to the potential development of the beater.

The fundamental thought behind the design is this: the roll and the bed-plate bars in combination do the work on the fiber. This is not a new thought so it should be acceptable as a premise.

Figure 1 shows a cross section through the beater. The roll is out of the tub—the tub is remote and separately located from the roll. A pump draws out of the tub and delivers to the roll a controlled quantity of stock through the flow valve and the stock distributor.

In conventional beaters the roll performs three functions: 1. it works on the fiber, 2. it circulates and mixes the fiber, and 3. it pumps or lifts the fiber. The latter two functions are secondary to the prime function of working on the fiber but necessary because of the inherent design of the conventional heater.

To obtain circulation in a conventional tub, the bars in the roll must be spaced sufficiently apart so as to provide an adequate opening into which the stock enters after which it is lifted over the backfall from where it flows down the beater channel aided somewhat by the velocity head of the roll.

Any circulation of fiber more than is required to cover the bar edges wastes beating power and circulation in excess of this contributes little to the beating effect between the roll and the bed-plate.

Following this line of reasoning, a logical conclusion is drawn that the efficiency of a beater is greatly influenced by the relation of the amount of fiber acted upon between the roll and bed-plate bars and the amount carried in the cells formed by the roll bars.

Assume that a beater roll has a 60-inch face and runs at a peripheral speed of 2,000 feet per minute. In this beater 390 gallons per minute is sufficient to cover the bar edges. This 390 gallons is arrived at by assuming a continuous film of fiber 1/16 inch thick at 5 to 6% consistency.

If a film of pulp is visualized at 5 or 6% consistency, 1/16 inch thick, it will be agreed that it contains enough fiber to cover the bar edges when under working pressure. Multiplying a 60-inch roll face by 1/16 inch film thickness by 2,000 feet per minute roll speed gives 90,000 cubic inches of film or 390 gallons per minute.

Most conventional beaters have a cell with an area not less than 1½ by 1½ inches. Assume a 60-inch diameter roll, 60-inch face with 110 bars.

If these 110 roll bar cells were full, they would handle 8,150 gallons per minute or about twenty times more fiber than is needed for bar coverage or what might be called the maximum beater requirement. But a cell is perhaps only ¼ full at high consistency so this excess must be divided by four. When this is done the gallonage carried is 2,060 per minute or five times more fiber circulated than is needed for bar edge coverage.

This excess handling of fiber beyond that needed for the bar edges contributes to inefficiency and little can be done about it so long as the roll is in the tub stock stream and the amount of stock comes to it in an uncontrolled quantity. In the "controlled flow" beater the roll has been taken out of the tub and the fiber pumped to it in sufficient quantity only to cover the bar edge. Little excess fiber need be handled, since the roll does not circulate or pump. It has only one job—to work upon the fiber.

Because of the two features of the "controlled flow" and the "roll-out-of-the-tub," the beater has potential-

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Conservation Coordinator, Hammermill Paper Co., Erie, Pa.

ities beyond those of conventional beaters. To consider these potentialities take a beater roll, using the inch cut per minute formula in which *NR* equals the number of bars in the roll, *NBP* equals the number of bars in the bed-plate, *F* equals the face of the roll in inches, *RPM* equals the revolutions of the roll per minute. In the conventional beater roll 60 inches in diameter let *NR* equal 110, *NBP* equal 48, *F* equal 60 and the *RPM* 127.

The inch cuts produced by such a roll would be $NR \times NBP \times F \times RPM$ or 40,200,000 per minute.

Roll Bars

The first factor in the formula is the number of roll bars. Because a 1½ inch space is required between the bars to get an adequate cell area, more bars can not be added without sacrificing circulation. The roll which does not circulate need not have large cells, so in the "controlled flow" beater the number of bars can be increased and the cell area reduced to a minimum without handicapping the beater's ability to take a variety of furnish. In the "roll-out-of-the-tub" a practical spacing could be ¾-inch centers which would give a ½-inch cell between the bars. At this spacing the roll would have 251 bars instead of 110. So the first factor in the formula can be increased 2¼ times.

The effect of this is not only to increase the working ability of the roll but it reduces the ratio of the amount of fiber in the cells to the amount of fiber between the bar edges which relation we claim has an important influence on beater efficiency.

It will be remembered that in the conventional roll, 390 gallons were needed for bar coverage and the cells were carrying 8,150 gallons or twenty times more than needed to meet this requirement when full or five times if ¼ full. The cells in the 251 bar roll are ½ by ½ inch. They have a capacity when full of 2,060 gallons per minute or only five times the amount required to fulfill the bar edge requirements against the 20 to 1 relation in the conventional rolls. If the cells were only ¼ full they would handle 515 gallons per minute or 1⅓ times 390 gallons—the amount required to cover the bar edges. With the bar edge coverage excess reduced to a minimum, the efficiency will be at a maximum.

Number of Bars

The second factor is the number of bars in the bedplate. It is not advisable to increase the bedplate width too far either side of the vertical center line of the roll. The component force of the weight on the bars at the outer edges is much less than those under the roll center line and it is difficult to keep such bars working to their fullest extent.

There is a critical pressure for each kind of fiber—sulphite, sulphate, rag, etc.—where cutting takes place. To beat effectively through a range of conditions the roll must be able to cut and if the roll bars are increased the square inches in contact between the roll and the bedplate bars are increased and there is danger that the roll pressure would not be sufficient to cut.

The "controlled flow" beater need not depend on the roll weight for pressure. Pressure is supplied through the bedplate and the roll is stationary.

In order to insure that the roll will be able to cut, the bedplate bars in the formula are kept at 48 on ½-inch centers which gives a good width for a 60-inch diameter roll.

Face of Roll

Factor number 3—the face of the roll. In a conventional beater, the roll face is limited by the inherent design of the beater and for that matter so is the diameter. A 1000-pound tub generally has a roll 48-inch face × 48 inches in diameter, a 2,000-pound tub—60-inch face × 60-inch diameter, a 3,000-pound tub—72-inch face × 72-inch diameter.

The 1,000-pound tub is about 20 feet long and a 48-inch diameter roll lifts the stock high enough so that the flow gradient will be enough in 20 feet to let the stock flow by gravity. The 2,000-pound tub is about 24 feet long—so the 60-inch diameter is needed to lift the stock 6 inches higher over the backfall. The 3,000-pound tub is 28 feet long and the 72-inch roll again lifts the stock higher in order to maintain the flow.

The face of the roll in a conventional beater is limited because it is difficult to maintain circulation in a tub that is too wide for its length. Dead spots are likely to develop. In a 1,000-pound tub a 48-inch face roll gives a tub channel of about 48 to 51 inches. A 60-inch face 2,000-pound tub requires a tub channel of about 60 to 63 inches and the 72-inch face 3,000 pound tub requires a tub channel of about 72 to 75 inches wide. If the roll face in a 2,000-pound conventional beater would be increased from 60 to 90 inches, complications would develop in the tub design. It would be wide and short and not easy to reconcile with good circulation.

With the "roll-out-of-the-tub," the face of the roll is not limited by tub design restrictions. The roll has nothing to do with the tub. The tub can be in the next building. So the roll face in the potential beater will be 90 inches wide.

Revolutions per Minute

The last factor in the formula is the revolutions per minute. Beaters today run at peripheral speed between 1,800 and 2,200 feet per minute. The speed range has been limited because the roll is in the stock stream. Tub design also affects the speed of the roll.

The author had a personal experience many years ago that illustrates his point. He rebuilt a flat tub Hollander to a high backfall type. This beater was driven by water power. When the high backfall was installed the roll ran at 120 r.p.m. The beater worked well. When summer came the water level dropped and the revolutions per minute in the beater dropped to 90. They had to lower the backfall so that the beater could circulate at 90 r.p.m. This shows that there is definitely a low limit that a conventional tub roll can run.

With the "roll-out-of-the-tub" it can operate at a 1000 feet a minute or less—if desirable. Theoretically a beater roll follows the power characteristics of a pump propeller and has a tendency to consume power as the cube of the speed. In practice the beater roll doesn't do this because the amount of pulp picked up by the cells is influenced by the peripheral speed of the bars when dipping into the stock stream. As a result the power increase, so far as experience goes, is about as the square of the speed. So in a conventional beater if the roll speeds were increased from 2,000 to 4,000 feet per minute the beater would be expected to use an impractical amount of power—providing the speed was not so high that the roll just churned around in the tub and picked up little or no stock.

The roll in the "controlled flow" tub beater is out of the stock stream. It is fed by a pump. The amount of stock to the roll is controlled by a valve in the pump discharge line.

So a controlled—minimum amount of stock comes to the roll—sufficient to cover the bar edges to their

maximum beating requirement. This eliminates the excess stock that must be accelerated by the roll and favorably affects the horse-power used.

The pump also gives another advantage. It can deliver the stock to the roll under sufficient pressure to overcome the centrifugal force of the roll at high speeds. So a roll running at 4,000 feet per minute is well within the probabilities of the "controlled flow" beater.

This speed opens up a lot of conjectures as to what will happen not only to the efficiency of the beater but the effect upon the fiber. To obtain some of the answers to these conjectures a series of tests have been arranged and experimental equipment installed that can run at 4,000 feet per minute. Perhaps next year these tests can be discussed.

Since it is practical we elect to run the roll in the potential beater at 4000 feet per minute.

So now the potential beater has 251 bars in the roll, the same number of bedplate bars—namely 48—the roll face is 90 inches and the roll will run at 4,000 feet per minute. Multiplying these factors together as done on the conventional roll, 278,000,000 inch cuts per minute is obtained against 40,200,000 previously computed.

So the potential beater has seven times the capacity of the conventional 60-inch face by 60-inch diameter beater used for comparison.

It may not be practical to use a roll with this enormous beating capacity except perhaps several in series for continuous beating. It is not easy to grasp—as yet—its full significance as a batch beater though it can be conceived that this capacity can be usefully translated into a saving in floor space, reduced initial investment (smaller rolls and higher speed motors), and/or in less horsepower hours consumed per ton of properly prepared stock.

This whole development indicates the "controlled flow" beater to be a flexible and an improved instrument for the treatment of fiber with potentialities not incorporated in other designs.

Time Cycle Pressure Control for Rotary Digesters*

By L. D. McGlothlin[1]

Abstract

The development of automatic cooking control for rotary digesters employing time cycle pressure to overcome mechanical difficulties encountered with other methods is presented.

The need of accurate and dependable control of the time-temperature cycle on any digester is necessary if uniform pulp is to be produced. Fitting a satisfactory control to a rotary kraft digester has presented many engineering and maintenance difficulties.

First of all, a short cooking cycle due to high liquor concentration has made accurate control imperative. Second, the low volume of steam per cook due to the characteristic small size of the rotary vessel and to the low volume of liquor to be heated, has imposed close tolerances as to flow control on the instrument. Third, the mechanics of fitting a stationary indicator to a rotary pressure vessel have proved more difficult than anticipated.

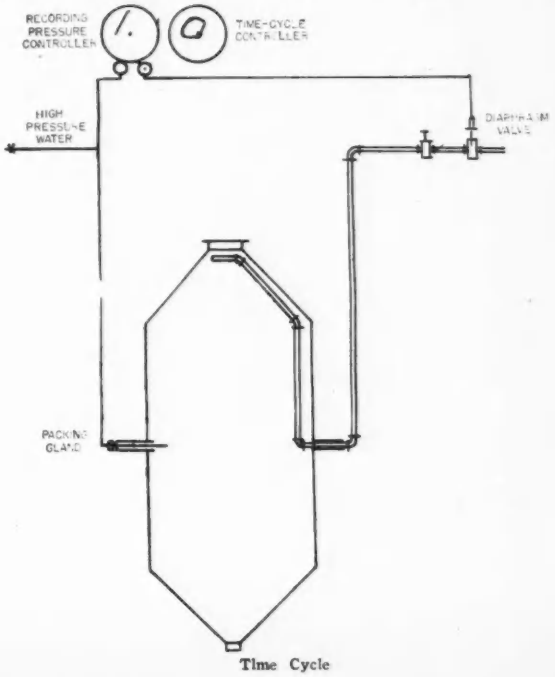
At any rate, the development of a satisfactory system has required a number of years' time and the advice and effort of many people. In the course of the development, a number of widely different installations were tried and discarded for various reasons.

Development

The first attempt was to place a stationary thermometer bulb in a hollow rotating trunnion. This required a packing gland on the outer end of the trunnion. This joint required continuous maintenance, and sooner or later the packing seized the rather fragile bulb and tore it loose from the instrument.

In order to eliminate the packing gland, the inner end of the trunnion was closed and the thermometer placed in an oil bath which required only a loose packing. Mechanicaly this was successful, but excessive temperature lag made the system completely impractical.

The next step in the development was the application of steam flow control. Here the small digester size and low liquor volumes proved too critical for the system. Any small fluctuation in conditions such as



*Presented at the Second Engineering Conference sponsored by the Technical Association of the Pulp and Paper Industry held at the Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.

[1] Kraft Mill Superintendent, Crown Zellerbach Corp., Camas, Wash.

a change in steam supply pressure, a little too much gas-off, a change of wetter wood (to name a few) would throw the final pressure off by as much as 10 pounds, and the temperature by a like amount. A home-made improvement was the addition of top pressure cut-out. The steam flow time was purposely lengthened to take care of any contingencies, and the top pressure cut-out stopped the flow at the proper pressure. This system had three principal faults; first, there was maintenance of numerous instruments; second, there were a number of inaccuracies seemingly inherent in the system; and third, and most important, there was no way of getting the cook to a given point on the curve at a given time consistently, so that the digester cook was continually making estimated adjustments of cooking in a cycle so short that minutes counted.

About this time an installation of resistance thermometers with external slip-ring take-offs was considered. No instrument company contacted would encourage the idea, and one even refused to make a proposal. In the face of such consistent discouragement the plan was never tried.

System Used

The present system utilizes time cycle pressure control with a continuous re-setting feature on the pressure controller. The diagram of the system is given in Fig. 1. A is a pressure recorder-controller. B consists of the time cycle cam operated by a 4-hour clock. A linkage system from the cam rider continuously repositions the control arm of the pressure controller according to the predetermined cycle. A typical diaphragm valve at C is operated by the controller. Digester pressure is transmitted to the recorder through an iron pipe inserted through the trunnion and rotating with it. A balanced packed joint at D joins the rotating pipe to the stationary system. The pipe in the trunnion occasionally plugs with stock and requires flushing. This is done at any time by means of the high pressure water line connected at 1.

In a kraft digester pressure follows temperature accurately once the cook has been thoroughly relieved. Thus, by controlling pressure we are actually controlling temperature, which is the true critical variable in the cook. With the system outlined above, the unpredictable fluctuations in conditions such as already mentioned are compensated for as soon as encountered within capacity limit of the diaphragm valve on the steam supply. Rate of steaming is not necessarily constant, but within close limits the rate of pressure rise is duplicated in successive cooks. The digester cooks no longer need to compensate for a lagging temperature nor hold back on too rapid a rise. It is obvious that this relieves them of considerable operating detail as well as eliminates the human element in this important phase of cooking.

At one time the pressure pipe in the trunnion corroded out, and as an emergency measure the pressure recorder-controller was connected to the steam supply on the digester side of the diaphragm valve. Since the pressure in this line is higher than that in the digester except at top pressure a new cam was cut to compensate for pressure drop where the steam enters the digesters. It was found that there is apparently a direct relationship between the pressure in the pipe and in the digester. At any rate the emergency measure operated in an entirely satisfactory manner without loss of production or quality until the regular system could be replaced at the next regular shut down.

The time-cycle pressure control system on the rotary digester is the simplest one that has been installed with regard to amount of equipment, and amount and type of maintenance. However, as so often happens, the simplest system has proved the most satisfactory in operation.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

W. Garwood Bacon, Jr., Salesman, E. W. Twitchell, Inc., Philadelphia, Pennsylvania.

Lawrence T. Brown, Assistant Treasurer, Bird Machine Co., South Walpole, Massachusetts, a 1923 graduate of Boston University.

John C. Cousins, Chemist, Sulphite Division, Penobscot Chemical Fibre Co., Great Works, Maine, a 1937 graduate of Bowdoin College.

Maria Duchac, Chemical Engineer, Florida Pulp and Paper Co., Pensacola, Florida, a 1947 graduate of Alabama Polytechnic Institute.

John F. Lampe, Owner, Export Purchasing Agency, New York 6, New York.

D. Kenneth McCurdy, Technical Assistant, Glassine Paper Co., West Conshohocken, Pennsylvania.

R. Narasimhan, Student, McGill University, Montreal, P. Q., Canada, a 1941 graduate of the Benares Hindu University.

Richard J. Snare, Assistant Chemist, Penobscot Chemical Fibre Co., Great Works, Maine, a 1933 graduate of the University of Maine.

John Verwayen, Engineer, Gibraltar Corrugated Paper Co., Inc., North Bergen, New Jersey, a Marine Engineer.

George B. Hills, Jr., Research Assistant, Engineering and Industrial Experiment Station, University of Florida, Gainesville, Florida, a 1946 graduate of Georgia School of Technology.

Thomas J. Kavanagh, Salesman, Holyoke Machine Co., Holyoke, Massachusetts.

Brian C. McMahon, Technical Assistant to Mill Manager, Marathon Paper Mills of Canada Ltd., Marathon, Ont., Canada, a 1938 graduate of the University of Melbourne with an M.S. degree.

Stephen Mahon, President, Stream Clear, Inc., Chicago 11, Illinois, a 1917 graduate of the University of Cincinnati.

William C. Martin, Student, Institute of Paper Chemistry, Appleton, Wisconsin, a 1943 graduate of the Ohio State University.

Edward J. Meier, Trainee, American Cyanamid Co., Stamford, Connecticut, a 1947 graduate of Wayne University.

Lloyd E. Oliver, Laboratory Assistant, Penobscot Chemical Fibre Co., Great Works, Maine. Attended Institute of Industrial Arts, Gardenvale, P. Q., Canada.

Edgar L. Russell, Paper Research Associate, R. R. Donnelley & Sons, Chicago, Illinois, a 1930 graduate of Wesleyan University.

Hans Schindler, Research Chemist, Daugherty Refinery, Division of L. Sonneborn Sons, Petrolia, Pennsylvania, a 1934 graduate of University of Prague with a Ph.D. degree.

Ellsworth H. Shriver, Student, The Institute of Paper Chemistry, Appleton, Wisconsin, a 1942 graduate of Ohio State University.

Marshall Sittig, Chemical Engineer, Eastern Corporation, Bangor, Maine, a 1940 graduate of Purdue University.

Combined Straw Again Injurious to Clover Seedings*

By C. J. Willard[1]

Abstract

Again in 1947, failure to remove combined straw after wheat harvest resulted in serious to total damage to the legume seeding in the wheat.

The summer of 1946 at Columbus, Ohio, was very favorable for clover and alfalfa. By August 20 there was a ton of first year clover hay on all the plots at Columbus. When this was cut and removed on August 20 the stand came through in excellent condition and made a large yield of hay in 1947. Where this growth of clover was left over winter, even though the combined straw had been removed earlier, there was a considerable loss of clover stand.

It appears that any accumulation of organic matter greater than 1 ton per acre on top of a new clover stand, whether it be wheat straw, weeds, clover growth, or any combination of these three, is likely to result in damage to the clover stand during the fall and winter. This damage is somewhat proportional to the amount of organic matter above one ton per acre left on the field. Clover was much more severely affected than alfalfa. The reason for this dying out of stands is still not clear.

In a paper *(1)* presented last year to this group, it was shown that when combined straw was left on new seedings of clover and alfalfa over winter, the stands of these crops were more or less damaged, and the yield of hay the next year reduced. An additional year of this experiment, harvested in 1947, confirmed these earlier findings and gave additional facts of interest.

The nine treatments which were applied in 1946 to an area of combined wheat in which a clover-alfalfa mixture had been sown are listed in Table I which repeats the data given last year with the addition of the data for 1947.

Unfortunately, the experimental area harvested in 1947 was nonuniform, and the initial stands present when the wheat was combined were extremely uneven. Of the twenty plots in the area, the original stand on five plots was a total failure, so that no data or observations were obtained from them. Seven plots furnished worth-while observations because of the tremendous contrasts between treatments, but the numerical data were, nevertheless, misleading. This left only eight plots on which the soil and stands were sufficiently uniform so that it seemed advisable to include the numerical data. Even here the margin of error is large, but the differences were so great that their significance is unquestionable.

The summer of 1946, after the wheat was combined, was very favorable for the development of clover and alfalfa. On all plots where the clover survived until the wheat was combined, there was a heavy growth of first-year clover and alfalfa hay on the plots by the middle of August. Where the plots had been cut and everything removed in July, this growth amounted to almost a ton per acre of high quality hay. Where the plots had not been cut there was, of course, more material of lower quality. On all plots the clover was in full bloom by August 20.

These plots, then, posed the dilemma faced by thousands of Ohio farmers in the fall of 1946. Should this heavy clover be cut, or should the field be left to go through the winter without cutting? Repeated experiments *(2)* have shown that it is decidedly unsafe under any condition to cut first-year red clover after the first of September in the latitude of Columbus (40° N.). On the other hand, clover is often winterkilled, and many left this heavy growth over winter thinking that it would be a protection to the clover.

As indicated in Table I, some of these plots were cut in August and some of them were not. Plots were cut in August which had not been cut in July, which had merely had the combined straw removed in July, and which had been cut and everything removed in July. In August, and indeed until the first of October, there was an excellent stand of clover on all of these plots regardless of treatment. Here, the clover was definitely not smothered by the straw.

Results

The contrasts between treatments in the spring of

TABLE I.—TREATMENT OF COMBINED STRAW (COLUMBUS, OHIO, 1943 TO 1947)

Treatment in Year Preceding Hay Harvest	Year of Harvest for Hay	Straw in Hay as Raked, %	Yield per Acre, 1st Cutting: As Raked, lb.	Yield per Acre, 1st Cutting: Clean Hay, lb.	Yield per Acre, 1st Cutting: Relative No. 4 = 100, %	Alfalfa in Hay, %
1. Nothing done after combining.	1944	13.2	2100	1820	62	
	1946	48.2	2910	1510	42	
	1947	54.2	3910	1790	52	95
	Av.	38.5	2970	1710	52	
2. Loose combined straw raked and removed at once after combining. Nothing else done.	1944	2.7	3000	2920	100	
	1946	8.5	3380	3100	85	
	1947		(3)	(3)	(3)	
	Av.					
3. Mowed at once after combining, material left.	1944	5.0	2730	2590	88	
	1946	6.6	3370	3150	86	
	1947	49.6	3570	1800	52	78
	Av.	20.4	3220	2510	75	
4. Mowed at once after combining, all material taken off.	1944	0.4	2940	2930	100	
	1946	0.2	3650	3640	100	
	1947	0.0	3460	3460	100	73
	Av.	0.2	3350	3340	100	
5. Mowed at once after combining, everything taken off, mowed again late August.	1946	0.0	3410(2)	3410(2)	94(2)	
	1947	0.0	3640	3640	105	62
	Av.	0.0	3520	3520	100	
6. Loose combined straw removed at once, stubble mowed late August, material removed 1947, left 1946.	1946	0.1	3520	3510	96	
	1947	0.0	3490	3490	101	51
	Av.	0.0	3500	3500	99	
7. Loose combined straw raked and removed 4 to 5 weeks after combining.	1946	10.7	4190	3740	103	
	1947	23.2	4220	3240	94	82
	Av.	17.0	4200	3490	98	
8. Mowed 4 to 5 weeks after combining, material left.	1946	31.3(1)	4090	2810	77	
	1947	35.0	4200	2730	79	54
	Av.	33.2	4150	2770	78	
9. Mowed 4 to 5 weeks after combining. All material taken off.	1946	0.0	3390	3390	93	
	1947	0.0	3450	3450	100	50
	Av.	0.0	3420	3420	97	

(1) The per cent of straw was obtained by sorting small samples. This plot was very uneven and hard to sample. Field observation suggests that this figure is much too high, yield, consequently, too low.

(2) Corrected from 1946 report.

(3) Observations showed a severe loss of stand and yield here as compared to treatment 6, but the initial stands were too poor over most of the plot to obtain yields.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

Contribution of the Department of Agronomy, Ohio Agricultural Experiment Station, Bankhead-Jones Project 50. Published with the approval of the Director of the Ohio Agricultural Experiment Station.

[1] Associate in Agronomy, Ohio Agricultural Experiment Station; Professor of Agronomy, The Ohio State University.

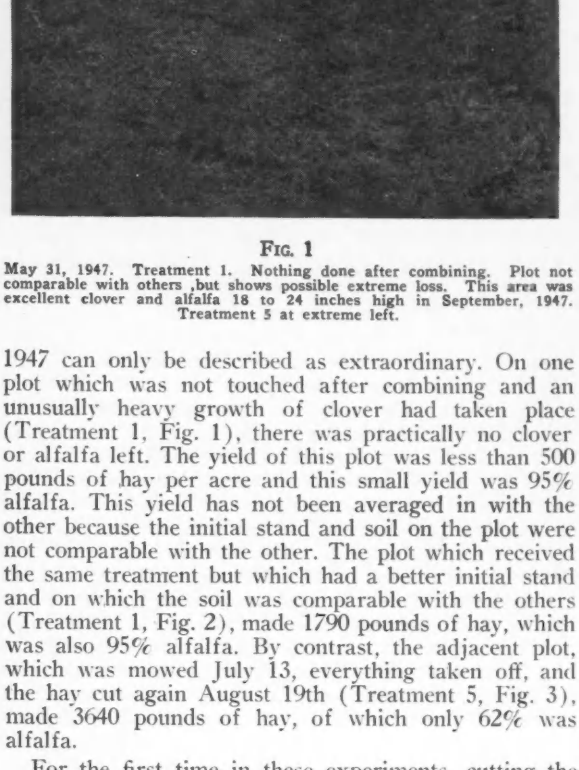


FIG. 1

May 31, 1947. Treatment 1. Nothing done after combining. Plot not comparable with others ,but shows possible extreme loss. This area was excellent clover and alfalfa 18 to 24 inches high in September, 1947. Treatment 5 at extreme left.

1947 can only be described as extraordinary. On one plot which was not touched after combining and an unusually heavy growth of clover had taken place (Treatment 1, Fig. 1), there was practically no clover or alfalfa left. The yield of this plot was less than 500 pounds of hay per acre and this small yield was 95% alfalfa. This yield has not been averaged in with the other because the initial stand and soil on the plot were not comparable with the other. The plot which received the same treatment but which had a better initial stand and on which the soil was comparable with the others (Treatment 1, Fig. 2), made 1790 pounds of hay, which was also 95% alfalfa. By contrast, the adjacent plot, which was mowed July 13, everything taken off, and the hay cut again August 19th (Treatment 5, Fig. 3), made 3640 pounds of hay, of which only 62% was alfalfa.

For the first time in these experiments, cutting the stubble at once after combining and removing all material (Treatment 4, Fig. 4) did not produce the highest yield, although it was a good yield. The plot from which the combined straw was raked and removed at once after combining and nothing done thereafter was seriously damaged before spring (Treatment 2, Fig. 5). Unfortunately, the initial stand was so poor that the yields were not significant. Where the hay and stubble were mowed in August after removing the loose straw in July (Treatment 6, Fig. 5), the yield was essentially equal to the plots where everything was removed in July and cut again in August.

The damage to the stand was roughly proportional to the amount of organic matter left on the field in September, whether this organic matter was straw, weeds, clover, or any combination of these three. Any amount of organic matter over a ton per acre caused losses. Where it amounted to 2 tons or more per acre, the loss was almost total.

These tests show how many losses of clover in recent years could have been prevented. Stands have been lost in good clover regions where first-year clover has been allowed to go to seed and the heavy growth left standing in the hope of providing winter protection. Producing seed in the first year does not kill red clover, as has been demonstrated many times, but the conditions accompanying a first-year seed crop, late cutting if it is harvested, heavy growth if it is not, are conducive to damage.

The cause of these losses in stand is still not clear. The symptoms are so much those of a disease similar to "damping-off" that we incline to the theory that the mass of organic matter encourages or permits the development of a disease or diseases which kill the stand. However, there are some indications that insects may also be a factor in these losses. Nothing is certainly known as yet. Mice are sometimes a factor in reducing clover stands when a heavy growth is left over winter but were not a factor in these experiments. Whatever the cause of the injury, alfalfa is much less subject to the injury than red clover, as evidenced by the composition (Table 1) of the hay on the worst damaged plots. Here there were only four weak clover plants

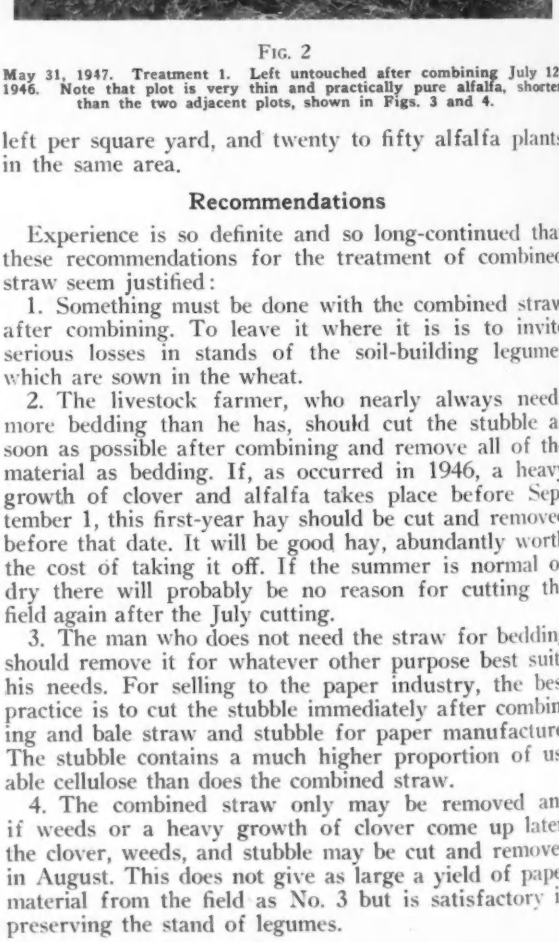


FIG. 2

May 31, 1947. Treatment 1. Left untouched after combining July 12, 1946. Note that plot is very thin and practically pure alfalfa, shorter than the two adjacent plots, shown in Figs. 3 and 4.

left per square yard, and twenty to fifty alfalfa plants in the same area.

Recommendations

Experience is so definite and so long-continued that these recommendations for the treatment of combined straw seem justified:

1. Something must be done with the combined straw after combining. To leave it where it is is to invite serious losses in stands of the soil-building legumes which are sown in the wheat.

2. The livestock farmer, who nearly always needs more bedding than he has, should cut the stubble as soon as possible after combining and remove all of the material as bedding. If, as occurred in 1946, a heavy growth of clover and alfalfa takes place before September 1, this first-year hay should be cut and removed before that date. It will be good hay, abundantly worth the cost of taking it off. If the summer is normal or dry there will probably be no reason for cutting the field again after the July cutting.

3. The man who does not need the straw for bedding should remove it for whatever other purpose best suits his needs. For selling to the paper industry, the best practice is to cut the stubble immediately after combining and bale straw and stubble for paper manufacture. The stubble contains a much higher proportion of usable cellulose than does the combined straw.

4. The combined straw only may be removed and if weeds or a heavy growth of clover come up later, the clover, weeds, and stubble may be cut and removed in August. This does not give as large a yield of paper material from the field as No. 3 but is satisfactory in preserving the stand of legumes.

5. The stand need not necessarily be cut until August but for producing either good quality bedding or good quality paper stock, the earlier the straw is removed, the better.

6. Cutting the stubble and doing nothing more is preferable to leaving the straw untouched. This method sometimes gives good results, but may, as in 1946-47, result in serious losses.

7. No cutting or clipping of red clover or alfalfa seedings in wheat stubble should be done high. The mower was set at ordinary hay height in all of these experiments. To cut high is merely to favor the weeds instead of the clover and alfalfa. The latter grow from the crown, whatever the height of cutting; the weeds grow from buds along the stem, and the higher they are cut the less they are injured.

Soil Conservation

Soil conservationists have well-founded objections to the sale of organic materials from the farm. Throughout the Corn Belt the preservation and increase of organic matter in the soil is the farmer's most important single problem in soil conservation and soil building. However, in this situation, the sale of straw not needed on the farm for bedding is desirable from a conservation viewpoint if the phosphate and potash which are removed in the straw are returned to the land in purchased commercial fertilizers. The organic matter removed in selling straw is not important for two reasons:

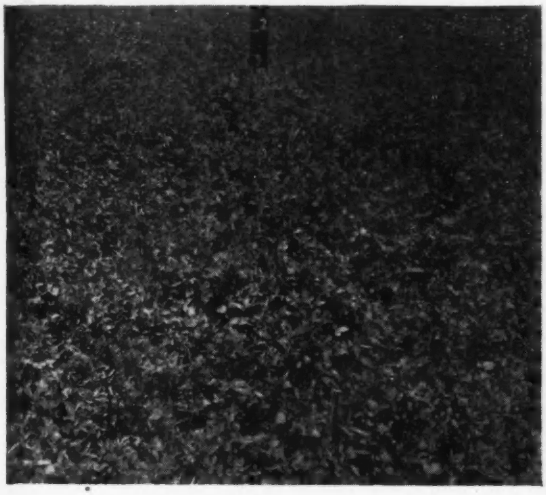


FIG. 3

May 31, 1947. Treatment 5. Cut the day after combining in 1946 and again the latter half of August, taking off about a ton of first-year hay per acre.

1. Under ordinary Corn Belt conditions combined straw left on top of new legume seedings will not be turned under with the plow until at least a year from the following March. Long before that time the straw on the surfaec will have rotted and disappeared as completely as if a match had been set to it. The only organic matter which gets into the soil from that straw is that very small part of the total which is water-soluble. Organic matter on the surface of the soil is important as a mulch, but in a new seeding there will be abundant clover and other growth within a week or two after the straw is removed to replace the straw as a mulch.

2. Furthermore, ten years of experiments have demonstrated that if there is a foolish attempt to save the straw by leaving it on the land, the stands of clover and alfalfa are destroyed. Legumes are the only really soil-building crops grown. To lose the stand of these crops for a ton to a ton and a half of straw is indeed to sell our birth-right for a mess of pottage. The roots of these legumes, even if the crops themselves are completely removed as hay, will leave in the soil more organic matter of better quality than the straw would leave if it were plowed under immediately after harvest. Actually, as has been seen, almost no organic matter reaches the soil from combined straw left on the surface over a seeding of a hay crop.

FIG. 4

May 31, 1947. Treatment 4. Cut the day after combining in 1946 and everything taken off. Nothing else done. Went into winter with 1¼ to 1½ tons clover-alfalfa hay per acre. Plot adjacent to the one in Fig. 2.

Since it is not known what causes the losses in stand described here, it cannot be said how far outside of Ohio these conclusions may be valid. Probably, the further west, that is, the drier the climate, the less likely these results are to follow, although there was some loss from leaving combined straw on a new seeding at Columbus in the driest year in the history of the Columbus Weather Bureau. It is believed that it is a reasonably safe assumption that results similar to these will be obtained anywhere in the Corn Belt east of the Mississippi River, and possibly anywhere east of the Missouri River.

FIG. 5

June 4, 1947. Left, Treatment 2, loose combined straw removed at once after combining, nothing else done. Right, Treatment 6, combined straw removed at once after combining, stubble cut latter half of August, everything taken off.

Economic Considerations of Feed Water Conditioning*

By F. N. Kemmer[1]

Abstract

Although new processes and reagents are being made available for conditioning boiler makeup, they should be examined by cost comparison with all treatments available for reduction of hardness, alkalinity, total solids and silica.

Data presented indicates the economies of reagents available for such reduction. Costs are presented on an equivalent basis to provide a relative index. Lime or dolomitic lime is applicable to each of the reduction processes at low cost. The limited efficiency of ion exchange systems is emphasized by the index.

Consideration is given to other factors modifying equipment selection, e.g. requirement for large volumes of process water.

It seems an embarrassing commentary on civilization that technological advance is accelerated during an era of war. No historian can say who first developed the wheel or for what purpose, but it is safe to guess that he was an army engineer given the problem of moving some ponderous object to a strategic point from which it could be dropped on the unsuspecting enemy.

TABLE I.—TOTAL ALLOWABLE SOLIDS VS. BOILER PRESSURE

Boiler Pressure, p.s.i.g.	Total Solids, p.p.m.
0- 300	3500
301- 450	3000
451- 600	2500
601- 750	2000
751- 900	1500
901-1000	1250
1001-1500	1000

Contrary to advertising propaganda during the past war the water conditioning industry did not develop anything quite as revolutionary as the wheel. However, as in other technical fields, a number of processes were developed and improvements made to equipment design. For example, demineralization of water, although first developed almost a decade ago, was improved to an extent making it widely useful in such processes as the manufacture of rubber and plastics. A process was conceived for removal of silica from water by ion exchange. Techniques for silica reduction in precipitation equipment were improved to provide residuals of less than 1 p.p.m. Compression distillation apparatus effected the economies of multiple effect evaporators.

While the accomplishments of the past decade in the water conditioning field have been creditable, they have been publicized with such zeal that it becomes difficult to examine a water conditioning problem in the light of cold facts.

TABLE II.—SILICA CONCENTRATION VS. BOILER PRESSURE

Boiler Pressure, p.s.i.g.	Silica, p.p.m.
150	150
250	100
400	75
600	50
900	25
1200–2000	5

Objectives of Feedwater Treatment

The important considerations in the selection of feed water conditioning systems concern the reduction of hardness, alkalinity, total solids, and silica.

Not so long ago sludge was considered a part of boiler water. The absence of sludge was taken as an indication that hardness in the feed water was forming scale. The effect of sludge on circulation rates and the influence of suspended solids in inducing carry-over makes it desirable to keep the boiler water free of sludge, especially for operation over 1200 p.s.i. "Zero by the soap test" is not good enough for high pressure boiler feed, it being required for such service that the feed water hardness be less than 1 p.p.m. by gravimetric analysis. In the case of low pressure boilers, however, particularly where boiler tubes are large, sludge due to residual hardness in the treated feed water is permissible and the added cost for obtaining low residual hardness cannot be justified in most cases.

The controversy of alkalinity versus carry-over and embrittlement is one for the ivy-clad institutions and the specialists. It seems generally conceded that in equal concentrations alkalinity has a greater tendency to indue carry-over than do other solids which is sufficient information to warn to proceed with caution with alkaline boiler waters. On the effect of alkalinity on liberation of carbon dioxide with steam, however, there can be no dispute. At least 80% of the sodium carbonate alkalinity in a feed water is converted to caustic soda in the boiler with a corresponding liberation of carbon dioxide with the steam. Therefore, feedwater alkalinity control is desirable. To eliminate carry-over, boiler water alkalinity can be reduced by blowdown—an expensive method. However, the carbon dioxide liberated with the steam is almost purely a function of fed water alkalinity and is not affected appreciably by blowdown This emphasizes the desirability of controlling feed

TABLE III.—COMPARATIVE CHEMICAL COSTS FOR REDUCTION OF HARDNESS

Chemical	Process	Formula	Cost, $/ton	Units per Unit $CaCO_3$ Hardness	Cost, cents per gr./gal. 1000-gal.	Comparative Cost
Lime (90%)	Precip.	$Ca(OH)_2$	12	0.82–1.64	0.07–0.14	1.00–2.00
Dolamite lime (65%)	Precip.	$Ca(OH)_2 \cdot MgO$	13	1.14–2.28	0.11–0.21	1.52–3.04
Soda ash	Precip.	Na_2CO_2	24	1.06	0.182	2.60
Salt	Ion Ex.	NaCl	12	3.15	0.27	3.85
Sulphuric acid	Ion Ex.	H_2SO_4	24	1.75	0.30	4.30
Caustic soda	Precip.	NaOH	54	0.80	0.31	4.40
Phosphoric acid (75%)	Precip.	H_3PO_4	110	0.88	0.69	9.80
Disodium phosphate	Precip.	$Na_2HPO_4 \cdot 12H_2O$	60	2.39	1.02	14.6
Trisodium phosphate	Precip.	$Na_3PO_4 \cdot 12H_2O$	60	2.53	1.08	15.6
Disodium phosphate	Precip.	Na_2HPO_4	150	1.11	1.19	16.9
Monosodium phosphate	Precip.	$NaH_2PO_4 \cdot H_2O$	180	0.92	1.19	16.9

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 23-26, 1948.

[1] Cochrane Corp., Philadelphia, Pa.

TABLE IV.—CHEMICAL COST FOR ALKALINITY REDUCTION

Chemical	Process	Formula	Cost, $/ton	Units per Unit $CaCO_3$ Alkalinity	Cost, cents per gr./gal. 1000-gal.	Comparative Cost
Lime (90%)	Precip.	$Ca(OH)_2$	12	0.82–1.64	0.07–0.14	1.00–2.00
Dolamite lime (65%)	Precip.	$Ca(OH)_2 \cdot MgO$	13	1.14–2.28	0.11–0.21	1.52–3.04
Sulphuric acid	Direct ad.	H_2SO_4	24	0.98	0.168	2.40
Gypsum	Precip.	$CaSO_4 \cdot 2H_2O$	22	1.72	0.27	3.87
Sulphuric acid	Ion Ex.	H_2SO_4	24	1.75	0.30	4.30
Epsom salts	Precip.	H_3PO_4	110	0.88	0.69	9.80
Phosphoric acid	Precip.	$MgSO_4 \cdot 7H_2O$	36	1.20	0.39	5.60

water alkalinity, the degree of reduction being balanced between its cost and the cost of maintenance of traps and condensate lines subject to corrosion by the carbon dioxide re-dissolved in the condensate.

Reduction of total solids is important if only for the fact that total solids is the classical basis for determination of blowdown schedule. The selection of the maximum total solids concentration which can be maintained without carry-over must be tempered by consideration of the character of the solids. However, the American Boiler Manufacturers Association has set up standards which are generally acceptable and conservative; these are given in Table I.

Silica is objectionable in boiler waters for its tendency at high concentrations to form hard scale on heating surfaces and to be carried with steam into turbine blading where it deposits. Both phenomena are more noticeable at high operating pressures, and for that reason the maximum concentration allowable is a function of boiler pressure as is the case for total solids. Table II, based upon the experience of operators of plants with which the Cochrane Corporation has been concerned, is offered as a guide for control of silica concentration in boiler water, although this is admittedly arbitrary. In certain cases, where silica reduction in feed water is not practical, it will be found necessary to schedule blowdown on the basis of silica concentration rather than total solids. In such cases, a review of the cost of silica reduction should be made to determine whether the investment for the process can be justified on the basis of savings in reduced blowdown.

Cost of Chemical Treatment

Having reviewed the principal factors concerning the selection of feed water conditioning equipment, so that this will not be an academic discussion it is well to decide how much be paid to obtain the best boiler water, and what compromises can be made, since the best boiler water cannot be afforded, to obtain water that is only satisfactory.

The cost of hardness reduction is shown by Table III. In this tabulation, the various reagents have been placed on an equivalent basis. Obviously, such a table cannot tell the complete story, since, for example, residual hardness will vary. Nevertheless, the reagents are in correct relative position. Incidentally, it is of interest to note that although salt costs about the same as lime on a weight basis, nevertheless the relative cost of softening with sodium zeolite is two to four times the cost of softening with lime. This illustrates the failure of ion exchange equipment to completely utilize regenerant chemicals, approximately only 1 pound of salt being exchanged by the bed for every 3 pounds passed through it. The phosphates are shown to be expensive reagents and they are to be used only on a relatively soft water or for supplementary treatment after initial hardness reduction.

Table IV applies to the cost of alkalinity reduction. Again it is necessary to qualify these figures. Lime will reduce the alkalinity of most waters, but can have no effect on sodium alkalinity. The only method of reducing sodium alkalinity with corresponding reduction in total solids is by the ion exchange process operated on the acid cycle, since with the precipitation process or by direct addition, a byproduct is formed. However, here, too, the table forms a relative basis of comparison.

The cost comparison applying to reduction of total solids is given in Table V. The reduction of total solids by these various reagents should be considered from the standpoint of the calcium and magnesium carbonates in the raw water since only the ion exchange process operated on the acid cycle can effect reduction of sodium alkalinity. However, in consideration of the other salts present, the table represents a good estimate of the cost of total solids reduction.

Chemical requirements for reduction of silica are difficult to estimate: in the precipitation process, silica is removed by adsorption so that the chemical dosage is a function of the inlet silica concentration and the desired residual, and the dosage is also affected by the particular—and organic constituents in the water; in the presence of both inorganic salts—magnesium salts in ion exchange process, which has previously been shown to be rather inefficient, a review of the literature indicates that the sodium fluoride dosage must be approximately 175% of theoretical. Table VI indicates the approximate chemical dosage for silica removal. An attempt has been made to anticipate the requirements of each reagent based upon reasonable silica reduction; the data have been taken principally from laboratory and field reports and a general review of the literature.

In considering these costs, it must be recognized that they are to be compensated for the blowdowns schedule to be maintained, the blowdown schedule influencing the quantity of water required and also adding the expense of heat loss, which amounts to approximately 5 million pounds for every 1% blowdowns if continuous blowdown equipment with a 20° terminal difference is installed.

Cost of Equipment

No attempt is made to present equipment costs which are necessarily variable. For example, with precipitation processes, equipment cost is principally a function of load; with ion exchange equipment, it is a function both of load and concentration of salts in the incoming

TABLE V.—CHEMICAL COST FOR TOTAL SOLIDS REDUCTION

Chemical	Process	Formula	Cost, $/ton	Units per Unit $CaCO_3$ Total Sol.	Cost, cents per gr./gal. 1000-gal.	Comparative Cost
Lime (90%)	Precip.	$Ca(OH)_2$	12	0.82–1.64	0.07–0.14	1.00–2.00
Dolamite lime	Precip.	$Ca(OH)_2 \cdot MgO$	13	1.14–2.28	0.11–0.21	1.52–3.04
Sulphuric acid	Ion Ex.	H_2SO_4	24	1.75	0.30	4.30
Soda ash	Ion Ex.	Na_2CO_3	24	2.10	0.36	5.14*
Phosphoric acid	Precip.	H_3PO_4	110	0.88	0.69	9.80

* Note: Reduction of solids by demineralization will be a summation of 3 and 4 and will amount to 0.30c to 0.66c per gr./gal. per 1000 gal. as the ratio of alkalinity to total anions varies from 1.0 to 0.0 respectively.

TABLE VI.—CHEMICAL COST OF SILICA REDUCTION[a]

Chemical	Process	Formula	Cost, $/ton	Units per Unit SiO_2	Cost, cents per gr./gal. 1000-gal.	Comparative Cost
Dolamite lime (35% MgO)	Precip. (Hot)[b]	$Ca(OH)_2 \cdot MgO$	13	9.6	0.89	1.00
Remosil	Precip. (Hot)[b]	MgO	160	3.36	3.84	4.32
Epsom salts	Precip. (Hot)[b]	$MgSO_4 \cdot 7H_2O$	36	13.7	3.9–4.9[e]	4.4–5.5
Ferrisul	Precip. (Cold)[b]	$Fe_2(SO_4)_3$	50	29.6	11.4–13.4[e]	12.8–15.1
Fluorides	Ion Ex.[c]	NaF	200	7.5	16.6[d]	18.60

Note: [a] Based on initial silica of approx. 20 p.p.m.
[b] Precipitation process based on reduction to 1 p.p.m. SiO_2 in hot process, 3 p.p.m. in cold process.
[c] Ion exchange process based on reduction to 0.5 p.p.m. SiO_2.
[d] Cost includes additional acid and alkali required for regeneration by the fluoride addition.
[e] Cost includes alkali for precipitation.

water. The picture is further complicated by the requirement for other auxiliary equipment, particularly deaerating apparatus. Generally speaking, however, except for demineralizing equipment, the cost of the equipment seldom determines the selection since the fixed charges represent a small fraction of total operating cost when expressed as cost per thousand gallons of makeup. Nevertheless, equipment costs must be obtained, since occasionally it is found that investment for more expensive equipment with a lower cost of treatment may not be justified over less expensive equipment with a slightly higher cost of treatment.

Factors of General Influence

There are three other factors governing the selection of equipment which can be covered only by generalities. One of these is the presence of certain constituents in the water, such as color and turbidity. The presence of color in a water favors the selection of clarifying equipment and ion exchange apparatus, this for the reason that color leached from vegetation prevents precipitation of hardness in a sedimentation tank. The presence of turbidity, on the other hand, favors the selection of a precipitation type apparatus, since the removal of turbidity and hardness may be accomplished in a single apparatus, ion exchange softeners requiring that a turbid water be pretreated.

A second favor depends upon the individuality of the plant itself. One obvious item in this category is the limitation of space. Another, usually favoring ion exchange equipment, is the requirement for large volumes of treated water for process of cooling, forcing the power engineer to accept treated process water and to doctor it for his boilers. Still another item in this category, usually favoring a sedimentation process, is variation in the characteristics of the supply, brought about by seasonal variations in surface water or withdrawn from a number of wells on plant property.

The third favor, usually favoring the salesman with the most convincing story, is the cost of labor for operation and maintenance.

Modern Colloids

D. Van Nostrand Company has just issued "Modern Colloids—An Introduction to the Physical Chemistry of Large Molecules and Small Particles," by Robert B. Dean, asst. professor of chemistry University of Oregon. (303 pp 6¼ x 9¼).

The book is based on a course for undergraduate students who intend to specialize in industrial chemistry, biology, medicine or agriculture. It covers such subjects as: types of colloids, methods for determining the size and shape of colloidal particles; liquid surfaces, adsorption, ionic adsorption, high polymers; plastics, resins, rubbers; carbohydrates and proteins; colloidal ions; emulsions and foam; hydrous oxides and silicates and hyophobic colloids and suspensoids.

Copies may be obtained from the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y., at $3.75 per copy.

TAPPI Notes

W. Stanley Seaman, formerly of Angier Corporation, is now manager of Otis Angier & Associates, Framingham, Mass.

R. C. Richter, formerly of the National Container Corporation, is now pulp mill superintendent of St. Marys Kraft Company, St. Marys' Ga.

Arthur C. Dreshfield, 401 West Elm Ave., Lagrange, Ill., wishes to sell bound volumes of the TAPPI Section, Paper Trade Journal covering the years 1927 to 1936 inclusive. Inquiries should be sent to Mr. Dreshfield.

John L. Waldo, formerly of the National Aniline Division, AC & D Corp., is now plant manager, Hickory Specialty Company, Inc., Box 671, Hickory, N. C.

Vernon Woodside of the Mathieson Alkali Works, Inc., is now manager of the company branch office, 710 Queen & Crescent Bldg., New Orleans, La.

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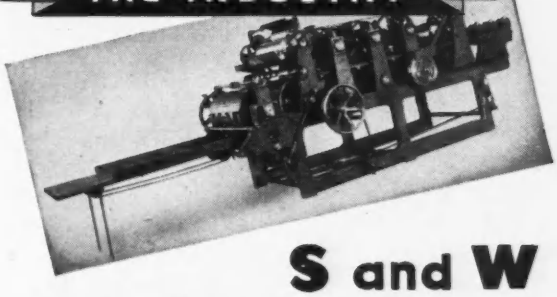

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